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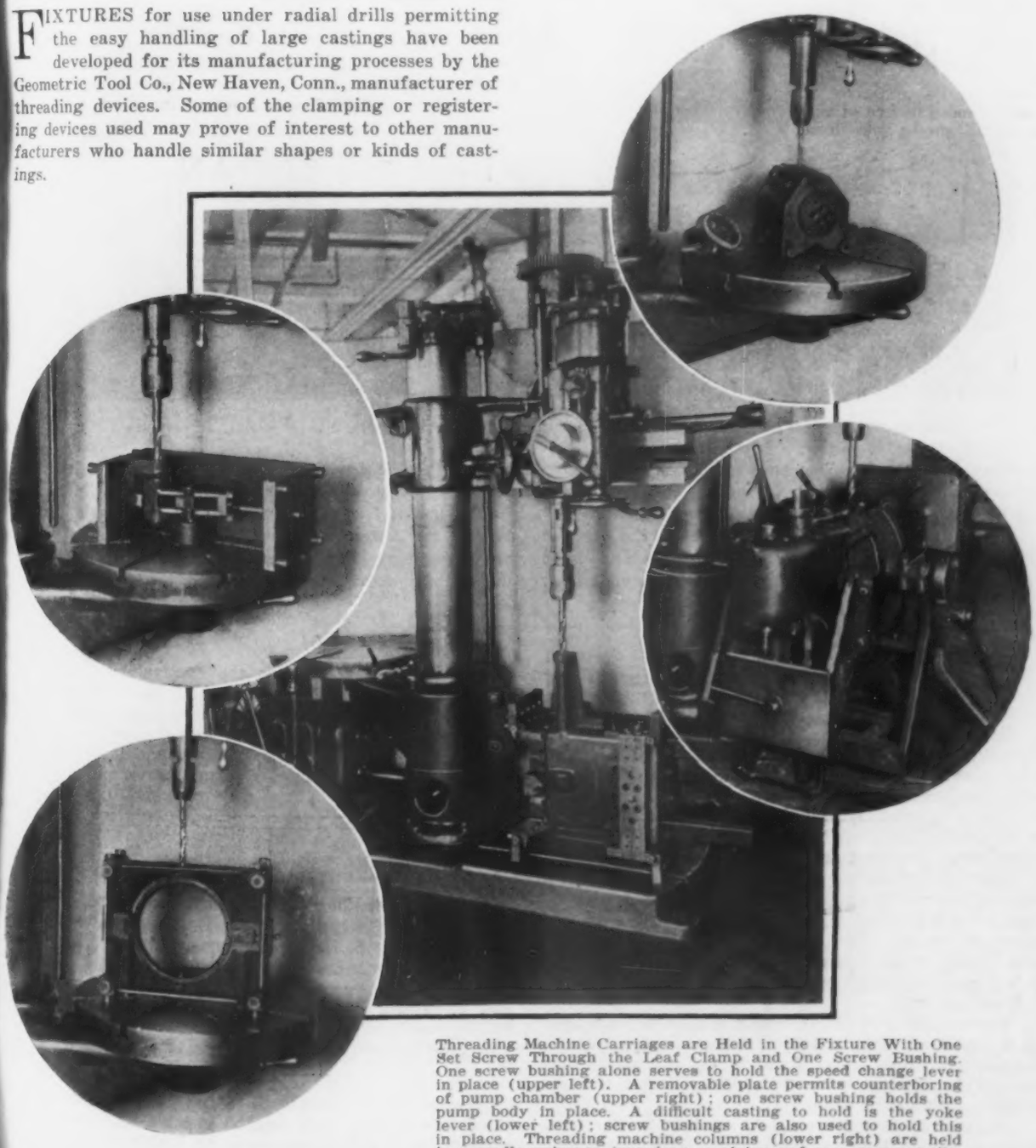
Fixtures Used in Machine Tool Production

Extensive Use of Screw Bushings—Drill Jigs for Holding Large Castings—Production Increased Three to Four Times Over Old Methods

FIXTURES for use under radial drills permitting the easy handling of large castings have been developed for its manufacturing processes by the Geometric Tool Co., New Haven, Conn., manufacturer of threading devices. Some of the clamping or registering devices used may prove of interest to other manufacturers who handle similar shapes or kinds of castings.



Threading Machine Carriages are Held in the Fixture With One Set Screw Through the Leaf Clamp and One Screw Bushing. One screw bushing alone serves to hold the speed change lever in place (upper left). A removable plate permits counterboring of pump chamber (upper right); one screw bushing holds the pump body in place. A difficult casting to hold is the yoke lever (lower left); screw bushings are also used to hold this in place. Threading machine columns (lower right) are held in a cradle swing on trunnions; a pinion and gear segment tilts the cradle, which is held in position by a locking pin

Several uses of the screw bushing are shown. One operation is the drilling of holes in all sides of the threading machine carriage. The casting is first milled on the main ways and tee slide before proceeding to the drilling operation. In the drill jig it registers from the milled surfaces, partly through a straddle leaf which engages the tee slide. With only a set screw and a screw bushing the casting is securely held.

The second example of the use of the screw bushing is in the drilling of speed change levers. In this case the large hub end of the lever, having been first faced on the bosses is forced into a vee block by means of a bell mouthed screw bushing bearing on the turned handle end. A guide block holds the lever from side play. This block slips between the two small finished bosses in the parallel arms of the lever.

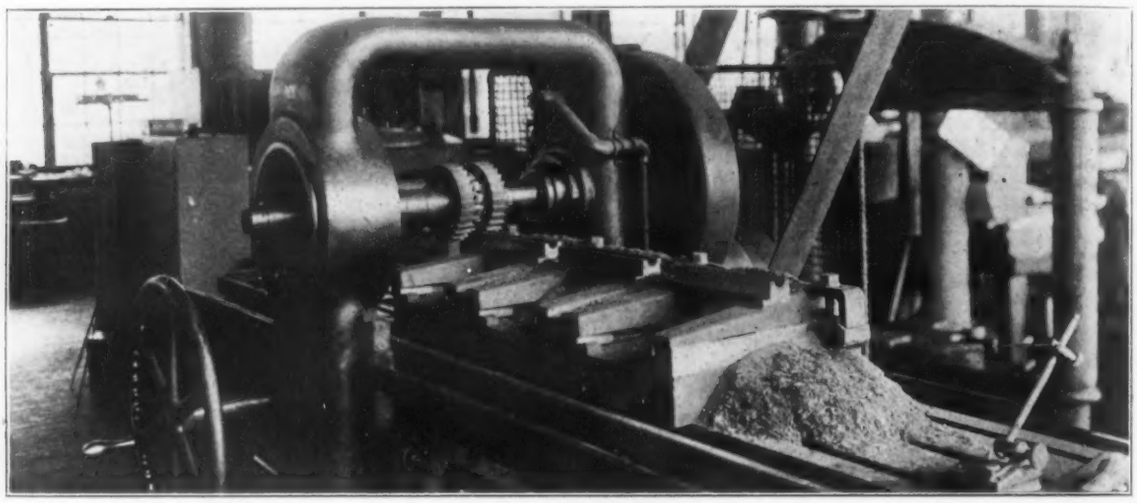
Geared pump housings are drilled completely in one jig. First the bottom and wings of the casting are machined; from these surfaces the casting is registered in the drill jig; it rests on hardened pins and is clamped in place by a screw bushing. A removable plate permits counterboring of the chamber and reaming of drive shaft and pinion stud holes.

Screw bushings are likewise used in the jig for drilling circular yoke levers. This fixture is made with vee jaws, one of which is adjusted with a thumb screw. When the casting is central horizontally, screw bushings are adjusted to hold it in place vertically. Holes are drilled from three sides.

A large type of swivelling fixture is employed for holding threading machine columns for drilling. This fixture consists of a cradle with trunnions having bearings in a base or frame. On one trunnion is a gear with teeth cut around part of the periphery, meshing with a hand operated pinion. This permits the casting to be swung around to different angles for the drilling of the required holes. A locking pin in the base casting engages with holes in the cradle thus holding it firmly in the desired position while drilling is performed. A toggle lever is used for clamping the casting in the cradle.

An interesting operation in gang milling is employed in this shop. In this job three carriage chuck jaw slides are clamped on the table of the machine. Five flat surfaces and a half round groove are milled at one setting. The castings having first been finished by milling on the main ways are registered from these finished portions with adjustable stops for lining up the work.

The use of fixtures above outlined has considerably reduced the cost on these operations, having increased production three to four times, and accuracy and interchangeability have been maintained.



Six Surfaces Milled at Once in a Gang Set-up Greatly Increases Production of Chuck Jaw Slides

Coke Market Softens—Protest Against Poor Car Service

UNIONTOWN, PA., April 9.—The coke market in the Connellsville region softened considerably during the week just closed, quotations ranging around $7, with some spot sales reported as low as $6.50. This situation, it is believed, is brought about by the embargoes to Greenwich piers on the Pennsylvania Railroad and curtailment of export shipments.

Coke production for the week ending March 31 hit a new high record for the year with 297,350 tons, an increase of 7140 tons, of which increase 6400 tons was merchant output. One hundred and sixty-two ovens were added to the active list. Merchant production, it is believed, has now been brought very closely to the current demand.

The softening of prices in spot coke is believed temporary and a firmer market is expected when the embargoes are lifted. Some furnace coke was sold on the spot market during the week at $6.50, although the spot market generally is around $7.

Steam coal hovers around $2, with by-product coal ranging around $2.50. Car placements for commercial loading on the Baltimore & Ohio F. M. and P. branch are around 20 per cent; on the Pennsylvania around 10 per cent, and on the Monongahela Railroad around 1 per cent. Sharp protests have been lodged with the railroads over this condition and with the Pennsylvania for its policy of providing an 80 per cent or better placement for coke loading, operators contending that a considerable number of coal cars are being diverted to coke loading.

Lead Production and Consumption in 1922

The production of refined primary lead in the United States in 1922, according to C. E. Siebenthal and A. Stoll, of the U. S. Geological Survey, was 532,662 net tons. This compares with 448,589 tons in 1921 and with 529,657 tons in 1920. The apparent consumption of refined primary lead in 1922 is reported as 492,705 tons; in 1921 and in 1920 this consumption was 444,872 tons and 538,020 tons respectively.

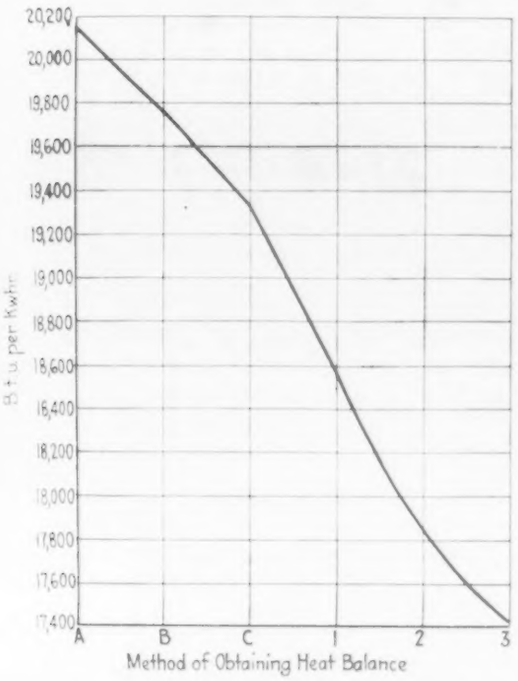
Walter Moore, president of the Empire Coal Co., Birmingham, Ala., says one bid to build a 50-oven by-product plant for his company at Empire coal mines has been received and others are expected this week.

Feed Heating Reduces Steel Power Cost

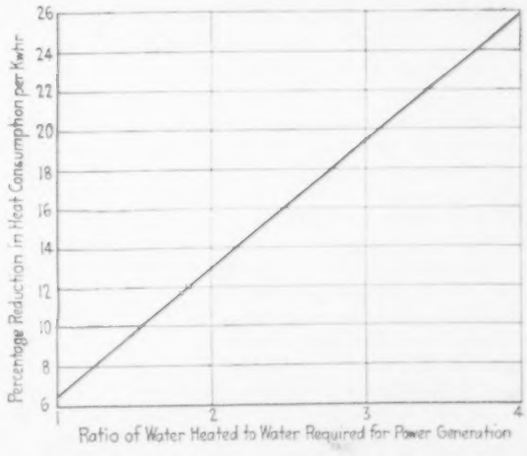
Significant Reduction in Fuel Consumption Using Multiple-Stage Condenser Heaters and Bleeding the Main Turbine

BY LINN HELANDER*

SIGNIFICANT reduction in fuel consumption, relatively greater than is obtainable in isolated central stations, can be made in steel plant power stations by the use of multiple stage heating of the boiler feedwater. This involves replacing the common method of heating the feedwater in an open heater by a series of closed heaters. Steam for heating the feedwater then may be taken from the main turbine through openings provided for this purpose in the turbine casing. In this way latent heat which otherwise would be wasted in the exhaust steam may be conserved. When three heaters are used in series, comprising three stages, the savings obtainable may range from 10 to 25 per cent of the fuel consumed in the generation of power.



Heat Consumption per Kwhr. for Various Methods of Heating the Feedwater and Driving the Auxiliaries. The designations along the base indicate the method used to obtain a heat balance. *A* indicates single-stage heating and steam-driven auxiliaries, the excess exhaust steam above that required to heat the feedwater to 210 deg. Fahr. being returned to the low pressure stages of the main unit; *B*, steam-driven and motor-driven auxiliaries, with the steam-driven auxiliaries loaded to give a feedwater temperature of 210 deg.; and *C* single-stage heating using a house turbine and heating the feedwater to 210 deg., all auxiliaries being motor driven. The numbers 1, 2 and 3 indicate one, two and three-stage heating to feedwater temperatures of 210, 270 and 325 deg., respectively, bleeding the main unit and using all motor driven auxiliaries. When bleeding the main unit, dual drives are used on the condenser circulating pumps, river pumps and exciters, to assure continuity of service



(Below) Reduction in Fuel Consumption per Kwhr. by Using 3-Stage Heating to give a Feedwater Temperature of 325 Deg. Fahr., as Against Steam-Driven Auxiliaries Loaded to give a Feedwater Temperature of 210 Deg. The benefit from stage heating is proportional to the quantity of water heated, so that the percentage reduction in heat consumed per kwhr., when all of the gain from stage heating is credited to the power generators, will be directly proportional to the ratio of water heated to that required for power uses alone. This curve is based on the assumption that, when steam driven auxiliaries are used, load may be transferred at and from the main unit to the steam-driven auxiliary units

These savings are large, as the quantity of steam required in a steel plant to heat the total feedwater and available for use in stage heaters is large, relative to that required by the power station alone. The requirements of the blowing room and mill engines, as well as those of the power station, must be met. This permits the recovery of a larger proportion of the latent heat of the steam used in the generation of power than would be possible in an isolated power station. These savings may be gained with small initial expense, provided the turbines in the power station are suitable for bleeding. The use of closed heaters also avoids wasting steam and water, common with open type heaters, and permits more ready de-aeration, if necessary. The amount of feedwater treated or distilled, in consequence, will be reduced, with resulting reduction in operating charges and improvement in boiler operation.

Evaluation of Improved Economy from Stage Heating

To demonstrate the merits of various methods of heating the feedwater and of driving the auxiliaries, heat balances have been established for an assumed steel plant having steam-driven turbo-blowers, steam turbine generators and completely electrified mill drives. These heat balances were based on using, I, steam-driven auxiliaries and steam-driven river pumps, the exhaust steam in excess of that required to heat the feedwater to 210 deg. Fahr. being returned to the low pressure stages of the main turbine; II, steam-driven and motor-driven auxiliaries, with the steam-driven units loaded to supply sufficient exhaust steam to heat the feedwater to 210 deg.; III, motor-driven auxiliaries, with a house turbine loaded to supply sufficient exhaust steam to heat the feedwater to 210 deg.; IV, motor-driven auxiliaries and bleeding the main unit to obtain sufficient steam to heat the feedwater to 210 deg. with single-stage heating; V, motor-driven auxiliaries, bleeding the main unit for two-stage heating and a feedwater temperature of 270 deg.; VI, motor-driven auxiliaries bleeding the main unit for three-stage heating and a feedwater temperature of 325 deg.

Summarized results of these heat-balance studies are given in the table. These data are based on a plant having a single-unit turbine generator which carries an average load of 15,000 kw. and turbo-blowers which require 120,000 lb. of steam per hr. The miscellaneous steam requirements are given in the table. Transformer and line losses for motor-driven auxiliaries were

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taken as 15 per cent of the power supplied to these auxiliaries. Steam of 325 lb. per sq. in. pressure and 200 deg. superheat at the turbine throttle was used.

Of the various methods of driving auxiliaries and heating the feedwater, that which uses completely steam-driven auxiliaries and provides for inducing the excess exhaust steam to the low pressure stages of the turbine is the poorest from the viewpoint of fuel economy. It provides, however, the simplest and most satisfactory method of controlling the heat balance when steam-driven auxiliaries are used. Compared with this method, the use of three-stage heating with a feedwater temperature of 325 deg. shows a reduction in fuel consumption charged against power of 13½ per cent, or a total saving of 40,700,000 B.t.u. per hour when the boiler efficiency is 75 per cent.

With coal at $6 a ton, the money value of this saving, assuming a combined load and use factor of 75 per cent, is $59,000 a year. With fixed charges against the capital investment of 15 per cent, this warrants an expenditure of $393,000. On the same basis of comparison, two-stage heating, bleeding the main unit, shows a saving of $50,000 a year; single-stage heating, bleeding the main unit, $34,000 a year; and single-stage heating with the house turbine $17,500 a year.

Of the arrangements studied, that involving the house turbine would probably require the highest initial investment, though in considering costs of this nature, credit should be given to the house turbine for the equivalent main-unit value of its power generating capacity. To compensate for the cost of heater equipment required when bleeding, the size of the main-unit condenser may be reduced, with a consequent lesser initial cost. If this is not done, the improved economy obtainable because of better operating vacua when bleeding than when not bleeding should be taken into consideration. With not more than three or four stages of feedwater heating, the piping complications with stage heating are not considerable.

Comparative Fuel Consumption and Power Data For Various Methods of Driving Auxiliaries and Heating the Boiler Feedwater of a Steel Plant Using Steam Turbine Generators and Steam Turbine-Driven Turbo Blowers

Initial steam pressure 325 lb. gage; superheat 200 deg. Fahr.; temperature of water entering first stage heater 75 deg.

	I	II	III	IV	V	VI
Net station load in kw	15,000	15,000	15,000	15,000	15,000	15,000
Auxiliary load including river pumps, kw	1,400	1,465	1,650	1,650	1,650	1,650
Gross station load, kw	16,400	16,465	16,650	16,650	16,650	16,650
Load on main unit, kw	15,000	15,420	14,890	16,650	16,650	16,650
Load on house turbine or steam auxiliaries, kw.	.....	1,045	1,770	.....	.....	.....
Condensate from main unit, lb. per hr.	171,900	168,780	163,920	155,938	147,475	142,100
Condensate from turbo blower, lb. per hr.	115,000	115,000	115,000	115,000	115,000	115,000
Steam for mud guns and incidental uses, lb. per hr.	15,000	15,000	15,000	15,000	15,000	15,000
Leakage, blow-off, etc., lb. per hr.	15,000	15,000	15,000	15,000	15,000	15,000
Total water heated, lb. per hr.	316,900	313,780	308,920	300,938	292,475	287,100
Total steam required for heating, lb. per hr.	42,300	41,800	42,300	42,800	62,800	82,310
B.t.u. in exhaust or bled steam above feed temperatures	1,011	1,011	985	950	950	950
Exhaust or bled steam available, lb. per hr.	56,000	41,800	42,300	42,800	62,800	82,310
Exhaust steam returned to main unit, lb. per hr.	13,700	.....	.....	.....	.....	.....
Total steam per hr.	359,200	355,580	351,220	343,738	355,275	369,400
Total B.t.u. per hr. supplied by boilers (thousands)	411,284	407,139	402,147	393,580	385,473	380,482
Thousands B.t.u. from boilers charged against other uses than power	184,700	184,700	184,700	184,700	184,700	184,700
Thousands B.t.u. charged against power per hr.	226,584	222,439	217,447	208,880	200,773	195,782
B.t.u. per kw. hr. at 75 per cent boiler efficiency	20,141	19,772	19,328	18,567	17,846	17,403
Per cent reduction in fuel charges compared to all steam driven auxiliaries, returning the excess exhaust steam to the low pressure stage of the main unit	0%	1.8%	4.0%	7.8%	11.4%	13.6%

NOTE: I—All auxiliaries steam driven; excess exhaust steam returned to main unit; feedwater temperature 210 deg. Fahr. II—Steam-driven auxiliaries loaded to heat feedwater to 210 deg. III—All auxiliaries motor driven; house turbine loaded to give 210 deg. feedwater temperature. IV—Single-stage heating bleeding main unit to give 210 deg. feedwater temperature. V—two-stage heating, all auxiliaries motor driven, bleeding main unit to give 270 deg. feedwater temperature. VI—Three-stage heating, all auxiliaries motor driven, bleeding main unit to give 325 deg. feedwater temperature.

Assurance Against Disruption of the Auxiliary Service

Present-day tendency appears to be toward modifying the house-turbine method of providing assurance against disruption of auxiliary power, or the complete elimination of this turbine. In place of it may be substituted house generators, coupled directly to the turbine shafts of the main units, or dual drives on the essential auxiliaries, such as the circulating pump of the main-unit condenser, the river pump and the exciter. The boiler feed pump may safely be made motor-driven. The use of auxiliary house generators coupled directly to the main unit, in stations of the size common in steel plants, probably will not meet with favor. For emergencies or for starting up, interconnection of the auxiliary power supply with the main bus power probably will be necessary if auxiliary house generators are used. Otherwise, heavy reactances to compensate for phase shifts between the auxiliary generators and oversized generators will be required. Interconnection with the main bus, however, is a recognized hazard which, particularly for steel mill service, should be avoided.

Dual drives, that is, a motor and turbine mounted on a common shaft, for the essential auxiliaries, with motor drives for other auxiliaries, is probably the most satisfactory arrangement for steel mill service. This arrangement permits taking full advantage of bleeding the main unit with adequate safeguard against disruption of the essential auxiliary service. The dual drive permits normally driving the river and condenser circulating pumps and the exciter by motors, so that the station under normal operation has the advantages in economy of completely motor-driven auxiliaries. Should disruption of the electrical service occur, or should other faults cause outage of the motors, the turbines will automatically pick up the load. Since the turbines are used only for emergency service, they can be designed to have a simple and rugged construction, with low no-load losses. As these units are now designed, no steam need be passed through them when they do not carry load.

Comparing Gas and Steam Plants

Consideration of the improvement in economy, obtained by efficiently heating the feedwater in multiple-stage condenser heaters, is particularly important when comparing the operating costs of a steam turbine driven power station and a gas-engine station. Heretofore, such comparisons have been based on single-stage open-type feedwater heaters operating inefficiently and heating the feedwater insufficiently to permit taking full advantage of bleeding the main unit. As indicated by the tables, the fuel consumption obtained with inefficient methods of heating the feedwater and driving the auxiliaries may be reduced 13 per cent or more by using motor driven auxiliaries and three-stage feedwater heating.

Future developments, now appearing likely in steam power plant practice, also should be borne in mind. As is evident from Mr. Orrok's paper given before the American Society of Mechanical Engineers, at its December meeting, we are now in a position to evaluate some of the future possibilities of steam power-plant practice as indicating considerably higher efficiencies than are now obtained. These developments, when they

come, no doubt will be of such a nature that existing steam stations will be able to take full advantage of them. On the other hand, so far as is now discernible, no equivalent evaluation of probable improvements in gas-plant practice can be made. At present higher thermal efficiencies may be obtained in gas-engine stations than in steam power stations.

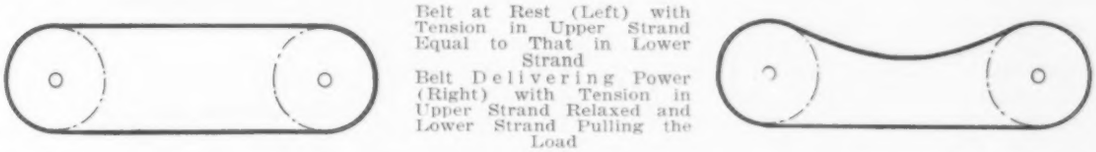
However, efficient bleeding of the turbines for feedwater heating, and the use of higher steam pressures, will materially reduce the advantages of the gas engines in this regard. Comparisons between the commercial economies, including capital charges, of gas-engine stations and steam-turbine stations should be based on steam stations deriving to the fullest extent practicable the advantages of high steam pressures and of efficiently bleeding the main unit to heat the feedwater. The steam pressures of the near future no doubt will approach 1000 lb. per sq. in., while four stages of feedwater heating is altogether practicable at the present time. These considerations make obsolete such comparisons between steam stations and gas stations as heretofore have been published, unless they are revised to accord with modern steam power-plant practice.

Fundamentals of Transmission of Power by Belting

Pulley Grip and Elasticity Essential to Efficiency in a Belt— Large Influence of Arc of Contact

BY LOUIS W. ARNY*

IN the ideal belt drive, in which the belt runs horizontally, pulling on the bottom, and in its modifications, driving at an angle, as much as 45 deg., and perhaps more, the belt still pulling on the bottom, we have a favorable illustration of the value of elasticity in the belt. Where the belt is put on the pulleys under the usual tension of about 288 lb., with the belt in a state of rest, the tension is fairly divided between the two strands of the belt (as illustrated in Fig. 1), provided either shaft is free to revolve. In the case of a belt of ordinary size, put on with belt clamps, the stress occasioned by the clamps usually is sufficient to revolve either one of the shafts to the extent of producing an equilibrium between the two strands, and the total tension on the belt is divided approximately evenly between them.



Belt at Rest (Left) with Tension in Upper Strand Equal to That in Lower Strand

Belt Delivering Power (Right) with Tension in Upper Strand Relaxed and Lower Strand Pulling the Load

In the case of a very large belt, say a heavy main driver, over an engine and a long and heavy countershaft, this might not be exactly true, because it may be impossible to supply sufficient strain by the clamps either to slip the belt or to turn either shaft, so that the full strain of the clamps is not communicated to the other strand of the belt, and the tensions may differ. Ordinarily, though, in the case of smaller belts, the tension on the two strands in a state of rest is practically the same.

When motion is applied, if the belt be of leather, the tensions probably will be slightly changed, even before the load is applied, that on the bottom side increasing slightly, and that on the top side decreasing slightly. But when a sufficient load is applied there gradually occurs a complete change, the bottom side becoming more taut, and the top side increasing in length and becoming loose and dropping considerably from a straight line drawn across the faces of the two pulleys. Apparently, as in Fig. 2, the tension which existed in this top strand in a state of rest has disappeared, or nearly so, and its total remaining tension probably is not more than that occasioned by its own weight. The tension on the bottom strand, however, has been increased by the application of the load, and whatever the load may be is carried by this bottom strand.

Carrying this load by the bottom strand depends, therefore, upon the adhesion of the belt to the pulley, because there no longer is a tension on the top side to hold the belt in place. The belt is appreciably longer than it was when standing, and without this quality of adhesion, or pulley grip, it simply would slide around the pulleys, and the tension on the bottom ply would be lost. With a good leather belt this tension, however, is not lost, because the pulley grip is of such intensity that the belt does not slide around the pulleys.

It is obvious, then, that pulley grip is a dominant factor of transmission. And this particular pulley grip, that is, the ability of the belt to hold firmly, or to stick tightly, to the pulley, is a feature of the leather belt only, which other types of belting do not possess intrinsically. In belts without a natural pulley grip it becomes necessary to supply a substitute, at least to an extent, and hence the use of sticky belt dressings, and the maintenance of a high tension on the top side. Some form of pulley adhesion may be supplied for a time by the application of "dope," but any advantage from such application is only temporary. Those belts which do not possess the elasticity of the leather belt, and hence will not pull out, or elongate, on the top side under a load, cannot rid themselves of their tension or back pressure on that side.

Power transmitted by any belt is measured by the difference between the tensions of the top and bottom strands. From the total tension of the bottom side must be subtracted the total tension of the top side. If, to prevent the belt from slipping, it be necessary that the original slow running tension on the top side shall be maintained, this must be deducted from the tension on the bottom side to secure the effective pull. This top side tension becomes a back pressure which the bottom side tension must overcome, and the maintenance of this tension, then, becomes a part of the cost of transmitting the load by this belt. If the same load can be transmitted by another belt without maintaining this tension on the top side, it is evident that it will transmit a larger load, or will transmit the same load at a less expense. Therefore the belt whose pulley grip is sufficient to carry its load without slipping excessively, and which has sufficient elasticity to elongate on the top side to an extent to cancel the tension of that side, will operate more favorably and more efficiently than the belt whose adhesion to the pulley must be maintained by a continuance of the tension on the top side.

The factors of economical and efficient power transmission by belting, therefore, are pulley grip and elasticity, and any belt to operate efficiently must possess both these qualities. This, then, becomes a measure of belt efficiency. Those belts which possess

*Secretary Leather Belting Exchange, Philadelphia.

both of these qualities are efficient belts, and those which do not possess them both are inefficient.

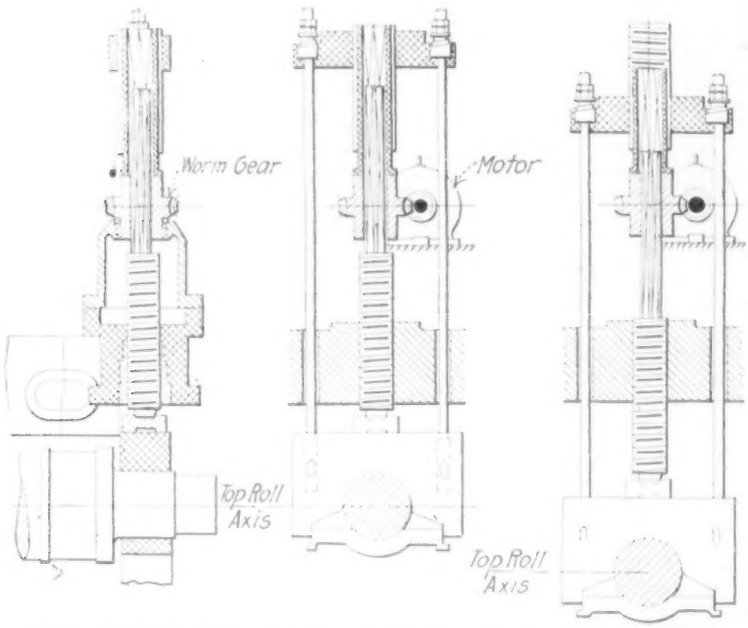
These points constitute the fundamental difference between leather and substitute belts. The grain or hair side of leather, properly prepared, makes a natural suction contact with the pulley, which cannot be duplicated artificially in other materials. All substitute belts fundamentally are fabric, and fabric in any form is incapable of making this suction contact with the pulley, and is notably deficient in elasticity as compared with leather.

The advantages of elasticity in the belt as above described are entirely separate and distinct from that other advantage of the increased pulley contact which is a result of the elongation of the top side of the belt. Pulley contact is one of the important factors of power transmission, and hence the more of the arc of the pulley that is covered by the belt the more will be the power transmission; and the longer and looser the top strand of the belt may be the more of the arc of the pulley will be covered. The value of pulley contact as a factor is in proportion to the degrees of arc of contact. Some good authorities claim that it is even greater, but this is a subject yet to be investigated. But it is evident that the belt which will run so loosely on its top side as to cover more of the arc of the pulley will operate more efficiently than the belt which covers less.

TOP-ROLL BALANCING GEAR

Electrical Instead of Hydraulic Operation in a German Design

Though the screw-down mechanism of rolling mills is now commonly operated by electric motors, the balancing of the top rolls is in most cases actuated hydraulically. To eliminate the hydraulic device a balancing gear has been developed in Germany and was recently described in *Iron and Coal Trades Review*, of London, by E. Krahnen, Duisburg, Germany.



Two Left Views Show the Gear Assembled, with Top Roll in its Highest Position. The view at right shows the top roll in its lowest position, the motor, operating through the worm gear, having screwed it down as far as it can go

The screw-down mechanism is of the worm-gear type, acting on the square shank of the down screw, the sliding fit permitting of a free movement of the spindle axially. Around the protruding end of this square shank fits a tube having an external thread of the same pitch as the main screw, which, owing to the sliding fit, can move freely in the axial direction. The nut of this tubular screw takes the form of a cross-beam, to the ends of which are attached two rods forming the top-roll suspension. By means of conical spiral springs an even tension of these rods is assured sufficient to press the bearing against the breaker, eliminating backlash.

The cut shows the whole gear assembled with the top roll in its highest and lowest position respectively. As the pitches of the main screw and tube threads are equal, the movement of the down screw, suspension rods and top roll correspond, so that balancing of the roll is assured.

For raising the rolls the motor is reversed. The tubular screw nut is raised, pulling up the connection rods and the attached roll. The entire weight of gear and roll is transmitted through the tubular screw, worm-gear hub, and ball bearing to the mill casing and housing, so that the main screw is carrying no load whatever except the pressure of the rolls. As the springs always press the breakers against the screw, all slack is taken out and hammering is avoided. A remarkably quiet working of the mill even at highest speeds is claimed.

Large blooming mills are generally provided with two motors to operate the gear. They are coupled together and mounted on a platform on top of the housing and controlled by one controller. For bar and structural mills one motor is regarded as sufficient. In order to stop the motor quickly and positively and to secure accuracy in adjusting the rolls, the motor is fitted with a powerful shoe-type brake with gravity set and solenoid release. The operator is thus enabled to adjust the rolls minutely and easily. The exact position of the rolls is indicated by a linear indicator and by a large dial graduated in sixty-fourths of an inch.

The World's Production of Tin

The world's production of tin in 1921 was only 109,704 metric tons, the lowest annual output since about 1908, and a decrease of about 16,000 tons from that in 1920, according to information now available in the Department of the Interior. Of this amount the United States, the largest user of tin in the world, consuming in 1921 more than a third of all the tin produced in that year, obtained from its own deposit only four tons of tin, about three one-thousandths of 1 per cent of the world's output of primary tin in that year, or about one one-hundredth of 1 per cent of the new tin needed in this country.

In 1921 nearly all (98.50 per cent) of the world's production came from the British Empire, the Dutch East Indies, Bolivia, Siam and China. The outstanding feature of the world's production of tin is the large proportion of it that is produced within the British Empire—44 per cent in 1921. The Dutch East Indies produced 25 per cent, a notable increase in the face of adverse world conditions, and Bolivia only 18 per cent, nearly 10,000 tons less than in 1920. Siam and China each produced between 5 and 6 per cent.

The Nueva Montana iron furnaces, which are the leading industry in the city of Santander, closed down several weeks ago. Since then the price of pig iron has dropped 15 pesetas a ton, leaving small hope of the furnaces being started up again in the near future, says Consul Maurice L. Stafford, Santander, Spain.

Current mechanical stoker sales are now reported by the Bureau of the Census. Reports were received from fifteen establishments. In February 129 stokers were sold for a total of 66,619 hp., while in January the number was 145 and the horse power 83,270.

Convention of Wisconsin Foundrymen

Cupola Practice, Use of Steel Scrap and the Electric Furnace for the Steel Foundry Discussed at Madison, Last Week

THE first annual convention of the Wisconsin Foundrymen's Association was held at the University of Wisconsin, Madison, April 4 and 5. The attendance was 115 and 41 separate foundries were represented. This is said to be the largest number of foundries which have ever been represented at a convention in that State. An address of welcome was delivered by Governor J. J. Blaine. The program included an extensive list of papers on subjects pertinent to the foundry industry as well as trips to plants in the city, including the foundry and shops of the Gisholt Machine Co., manufacturer of turret lathes and boring mills; the French Battery & Carbon Co. plant; the United States Forest Products Laboratory and the Engineering College Laboratories. The technical sessions were held in the auditorium of the College of Engineering.

A resolution was adopted expressing the appreciation of the association for the work done by the university in connection with the convention and its offer of the use of its laboratories and the assistance of its technical staff to the foundries of the State. A second resolution urged cooperation to the fullest extent possible with all national associations having kindred interests in the foundry industry.

Officers of the association are: President, William J. Grede, Liberty Foundry Co., Wauwatosa, Wis.; first vice-president, Scott Mackay, Stowell Co., South Milwaukee, Wis.; second vice-president, Charles E. Schwab, R. J. Schwab & Sons Co., Milwaukee; third vice-president, E. M. Hanley, Chain Belt Co., Milwaukee; financial secretary, Joseph L. Wurm, R. J. Schwab & Sons Co., Milwaukee.

Abstracts of the papers delivered follow:

Selecting the Cupola

Cupola practice was the subject of a paper read by A. W. Gregg, Whiting Corporation, Harvey, Ill. He pointed out that there is a wide divergence of opinion as to the best methods of obtaining good results in the foundry. All practices followed, however, are for the purpose of achieving the same end, that is, good iron. He defined good iron as follows:

(1) Hot iron—hot enough for the work in question.

(2) Iron which will come from the cupola at a rate adapted to the handling facilities of the shop.

(3) Iron which will insure castings free from slag and shrinks and soft enough to be machinable at a speed satisfactory to customers.

(4) Iron of the above characteristics, which can be produced with a minimum of expenditure for labor, coke and melting stock.

The importance of cupola operation, Mr. Gregg said, was apparent from the fact that the average hot metal cost is not less than 40 per cent of the total cast of the finished product. Cupolas are built in sizes ranging from 12 to 120 in. in diameter inside the lining, although the smallest practical size is 37 in. in inside diameter. A properly operated cupola will melt 10 lb. of iron per sq. in. of area per hr. The average size of cupolas in use is the No. 6 with a 48-in. lining diameter. This size will melt 8 to 10 tons an hr.

The selection of the size of a cupola is determined by the daily melt desired and the length of time allowed per heat. The average small to medium foundry takes one heat a day and has the cupola in blast two to four hours. In large production shops and continuous operation foundries engaged in automotive work iron is poured continuously. In those plants cupola operation must be systematized to a nicety, and the output of the melting department must be accurately balanced against the production of finished molds. In probably the largest automobile foundry, 30 No. 8 cupolas are in use, pairs of two of which are in blast while the other pairs of two each are being repaired ready to go in blast. This shop finds 12 hr. the most economical length of time to operate, although cupolas there have been in succesful operation for 24 hr.

Correct Bed for Cupola Charge

Melting takes place above the tuyeres and with proper operation, the bed of coke, the size of the iron charges, and the size of the intermediate coke charges should be so proportioned that melting takes place at the hottest point in the cupola. The location of this point varies somewhat with the volume and pressure of the blast and the kind of fuel used, but can be accurately determined by observation of the cupola lining after dropping bottom by noting where the greatest cutting and melting of the brick has occurred. In most cupolas this is 20 to 30 in. above the top of the upper tuyeres. To this point plus 2 or 3 in., the coke bed should be built. It is well to have a stick which will reach from charging door to the top of the bed and this should be used daily. Measurement should be made after the bed is lighted and all the wood burned away.

Other points discussed by Mr. Gregg were the size and composition of the metal charge, proper charging, the amount of air necessary for combustion, the melting ratio, single versus double-row tuyeres, height of charging door and slagging. On the subject of the composition of the charge, he asserted that silicon received the most attention, whereas carbon is more important. The total carbon should be determined in every gray iron analysis, for it is only when one knows the total carbon that one can predict the effects of silicon, sulphur and manganese in regulating the combined carbon, upon which the machinability of a casting depends.

Proportioning Steel Scrap in Charge

The chemistry of semi-steel was discussed by J. E. Bock, Vilter Mfg. Co., Milwaukee. Gray iron of high quality having a tensile strength of at least 30,000 lb. and transverse strength of at least 3200 lb., is made from mixtures containing from 10 to 40 per cent of steel, he said. Such a product is uniformly obtainable only when both raw materials and the finished castings are under continuous control.

The most important factor in deciding upon the percentage of steel to be used in making a mixture is the thickness of the metal in the finished castings. The lightest sections ordinarily require 10 to 20 per cent of steel and the percentage is increased with increase in section, 40 per cent being the highest percentage feasible under ordinary melting conditions. Almost any mild low carbon steel is suitable for use as steel scrap, provided it is available in pieces roughly of the same dimensions as pig iron. All steel scrap should be analyzed in the laboratory for carbon, sulphur, phosphorus and manganese, which are relatively important in the order named. Pig iron, which makes up upward of 50 per cent of the ordinary semi-steel mixture, is analyzed in the same manner. The remaining raw material is usually scrap gray iron.

Many foundries use any scrap which may be available and do not hesitate to use as much as 50 per cent. For high grade work, however, when close adherence to analysis is required, not more than 25 per cent of gray iron scrap is used and some foundries limit themselves to the use of their own so-called semi-steel scrap. Proper use and control of alloys, coke, limestone, fire-

clay, fire brick, sands, as well as careful regulation of cupola practice are other subjects which were covered by Mr. Bock. The effect of various percentages of silicon, sulphur, phosphorus, manganese and total carbon on the finished castings was also explained.

Brass Castings Discussed

Prof. E. D. Fahlberg, Department of Chemical Engineering, University of Wisconsin, had as his subject the effect of metallic and other additions to brass. He stated that the behavior of brass when third metals are added is a matter of great practical importance to the brass foundryman; yet it is a subject which has not received the attention that it deserves from metallographists with the consequence that very little is known except a few empirical facts which are based almost entirely upon qualitative results. Professor Fahlberg briefly summarized the effect of both intentional and unintentional additions to brass, including tin, lead and iron in the first class, and aluminum, antimony, manganese, bismuth, arsenic, cadmium, silicon, phosphorus, copper oxide, zinc oxide, aluminum oxide and silica among the unintentional inclusions. The latter class of elements and oxides are considered injurious to brass and to keep them below a necessary minimum the brass founder must sort his scrap very carefully.

Giving Steel Castings Toughness of Forgings

How to make steel castings as tough as forgings was discussed by L. R. Mann, Sivyer Steel Castings Co., Milwaukee. Although it is the common belief of steel consumers that mechanical treatment of the metal is essential to give it strength and toughness, it is possible, through proper heat treatment, to give cast steel properties which are comparable to those found in the best forged steel. A preliminary requirement is the pouring into the molds of "dead" or thoroughly deoxidized steel. For this reason the steel should be made, or at least finished, in the electric furnace. Such steel has approximately the same specific gravity as forged steel; so any superior qualities that may be found in the latter must be due to more suitable internal structure. How the internal structure of cast steel may be altered through heat treatment so that it approximates that of forgings was explained at length by the speaker.

Arthur Hungelmann, consulting metallurgist, Chicago, delivered an address illustrated by lantern slides of micrographs, in which he emphasized the necessity of impact tests for cast steel. Frequently an improperly annealed casting will show well under a test for tensile strength. The only sure way of distinguishing between a properly and an improperly annealed steel is through an impact test under which a test bar is subjected to repeated blows. He showed on the screen a simple device used for this test.

Basic Versus Acid Electric Steel Castings

A. T. Baumer, Milwaukee Steel Foundry Co., Milwaukee, Wis., compared basic and acid furnaces in electric steel foundries. At the outset he pointed out that it is far cheaper to operate an acid electric furnace than a basic furnace. The inside of the acid furnace is built up of silica brick and lined with ganister, which may be readily patched. A basic lining consists of magnesite brick with a bottom of burned magnesite tamped with tar and is more expensive. The choice between the two depends upon whether quality or quantity production is desired. There is no question that basic steel is superior to acid. In the acid furnace there is an oxidizing condition at all times and it is impossible to make alloy steel with guaranteed results because the alloys themselves oxidize very quickly. In adding alloys in the ladles it is impossible to obtain uniform results. In basic practice, the alloys may be mixed in the furnace. In some respects the basic electric furnace is like the basic open hearth. It is superior to the open-hearth furnace, however, because of the uncertainty of sulphur elimination in the latter. One difficulty in basic electric furnace practice is the tendency of slag to get into the ladles. This can be largely overcome, however, by bottom pouring.

Material for Patterns

Charles Jurack, Charles Jurack Co., Milwaukee, manufacturer of patterns, spoke on the subject of patterns and pattern-making. Proper pattern equipment, he said, is exceedingly important and largely governs the production of foundries. Patterns may be divided into four classes: 1. One-casting patterns; 2. Occasionally used patterns; 3. Semi-production patterns; 4. Continuous-run patterns.

The first class should be made as cheaply as possible and should be destroyed after they have been used. The second class is the commonest and includes patterns made from pine, cherry, mahogany or metal. These require the greatest care because patterns are subjected to greater strain in stores than in use. Wood patterns must not be allowed to dry out, as they will then warp when they get in contact with damp sand. He cited an instance where $3,000 worth of castings were spoiled because the patterns had shrunk. No wood patterns will stand great heat, as they lose all their sap at high temperatures. Patterns of the second class are preferably made from pine because it will absorb and eject moisture and at the same time has the faculty of resuming its original shape after being dented. Cherry is used for large flat surfaces, but lacks the resiliency of pine. Mahogany will not distort under different atmospheric conditions and also has the power of recovering its shape after denting. Hard wood or metal are generally used for patterns of the last two classes, because of their durability. Class 4 patterns in the best practice are used in conjunction with molding machines.

Unsatisfactory Bond Test for Sand

Prof. J. F. Oesterle, Department of Mining and Metallurgy, University of Wisconsin, presented tables showing the results of tests of Wisconsin molding sands. The Parmalee method was used in the fineness test, while permeability was gaged by the time required for gas to pass through a column of sand. For bond the procedure was to ram up a bar 1 x 1 x 12 in. and push it over the edge of a plate, measuring the portion of the bar remaining after the end had broken off. This test he regarded as unsatisfactory both because experiments with bars of different dimensions did not show like results and also because the personal factor was too variable. It is impossible to ram bars exactly the same, and frequently hardness pockets in the bars cause fractures which give little indication of the true strength of the sands.

F. J. Thibault, Ackermite Co., Chicago, addressed the meeting on the casting of lead-copper alloys. He stated that through violent agitation of mechanical mixtures within a certain range of heats, his company successfully produced "ackermite" castings containing from 30 to 40 per cent of lead and 60 to 70 per cent of copper up to weights of 1000 lb. each. The more violent the agitation at certain temperatures, the more one metal is broken up in the other.

Others on the program were Dr. O. P. Watts, Department of Chemical Engineering, University of Wisconsin, who discussed electric furnaces for melting brass; C. E. McCampbell, Gisholt Machine Co., Madison, whose subject was welfare; A. E. Hageboeck, Frank Foundries Corporation, Moline, Ill., whose paper was entitled "Advantages of Local Foundrymen's Associations," and L. L. Smith, Kohler Co., Kohler, Wis., whose subject was foundry welfare and social work.

Exhibition of Foundry Equipment and Supplies

An exhibition of foundry equipment and supplies was held in the stock pavilion of the university. The exhibitors were as follows: Arcade Mfg. Co., molding machines, Freeport, Ill.; Carpenter Brothers, Milwaukee, dealers in foundry clays, sands and fire brick; Donald Sales & Mfg. Co., Milwaukee; Federal Foundry Supply Co., Cleveland; Fredman Bag Co., Milwaukee; American Foundry Equipment Co., New York; Herman

Pneumatic Machine Co., Pittsburgh; Industrial Core Oil Co., Milwaukee; International Molding Machine Co., Chicago; Pangborn Corporation, Hagerstown, Md.; Charles Jurack Co., patterns, Milwaukee; L. J. Pierson Minerals Co., blended and fluffed molding sands, Milwaukee; George M. Pendergast & Co., foundry sands, Milwaukee; Whiting Corporation, Harvey, Ill., foundry equipment; John Mertes, dealer in foundry equipment and machine tools, Milwaukee; Milwaukee Foundry Equipment Co., Milwaukee; W. H. Pipkorn Co., fire brick, fire clay and foundry supplies, Milwaukee; Rogers, Brown & Co., pig iron and coke, Cincinnati; Sterling Wheelbarrow Co., flasks and wheelbarrows, Milwaukee; Trucson Steel Co., flasks, Youngstown, Ohio; Zanesville Sand Co., molding sands, Zanesville, Ohio.

State Appropriations to Fight "Pittsburgh Plus"

The Minnesota legislature has appropriated $10,000 to promote the campaign against the "Pittsburgh plus" practice. This action was taken by both houses without a dissenting vote. The house of representatives passed the measure April 3, while the senate acted on March 27. The bill places the appropriation in the hands of a committee consisting of the governor and the attorney general, who will take such steps as they deem necessary to bring about an abatement of the Pittsburgh plus practice. The measure was vigorously supported by the Minnesota Farm Bureau Federation, the Duluth Commercial Club, the Minnesota Farmer Grain Dealers' Association, the Twin Cities Purchasing Agents' Association and other agricultural and commercial organizations in Minnesota. Minnesota is the first State to appropriate money to fight "Pittsburgh plus."

On April 7, the senate of the Iowa legislature unanimously passed a bill appropriating $10,000 for the campaign against the Pittsburgh basing point practice. The bill will now go to the house for a vote.

Increased Production of Magnesite in 1922

The production of crude magnesite in the United States in 1922 was 32 per cent greater than that in 1921. It amounted to 63,487 net tons, valued at $650,742, according to figures compiled by James M. Hill, of the U. S. Geological Survey. Practically all the magnesite mined in 1922 was obtained from deposits in California, though a little was mined in Washington during the later part of the year, and some calcined magnesite was shipped from stock piles at Valley, Wash.

Figures showing the imports of magnesite since the tariff act of 1922 went into effect (Sept. 22, 1922) have not yet been published. The imports during the part of the year prior to that date amounted to 112,159 tons, as compared with 42,486 tons in the whole of 1921. No crude or calcined magnesite was exported in 1922.

More than 90 per cent of the domestic magnesite produced in 1922 was sold in the calcined form and brought from $30 to $50 a ton. The assurance of good prices upon the passage of the new tariff act greatly stimulated the domestic industry. Many deposits in California are being reopened, and additional equipment is being installed at calcining plants. There is also renewed activity in the Stevens County field, Wash.

Aluminum Alloy Foundry Sands

A preliminary report to the joint molding sand research committee on the conservation and reclamation of sands in aluminum-alloy foundry practice has been submitted by R. J. Anderson, metallurgist, Department of the Interior, Bureau of Mines. It has been found that no attempts are made to reclaim used sands in practice. A report on data submitted by aluminum foundries in reply to a questionnaire is in process of preparation.

IMPROVEMENT IN BRIDGEPORT

Sustained Full Employment in Manufacturing Plants—Notable Feature

BRIDGEPORT, CONN., April 7.—Manufacturing conditions in Bridgeport have been steadily improving for the last year, with very marked stability in the six months just passed.

Figures handed to the Manufacturers' Association compare the man hours with average factory hours. Thirty-one manufacturers have contributed data from their own factories. Based on an estimated normal of 25,318 employees, the employment in the week ended March 31 is 18,365 or 72.5 per cent. It is probable that the estimated normal is really higher than it should be, owing to the tendency to let war conditions of employment creep into and influence the establishment of such a so-called normal figure. This would indicate that present employment really bears a higher percentage of normal than would be indicated by the 72.5 per cent.

Based on 18,365 employees the man hours are 791,642, or 63.8 per cent of the normal man hours of 1,240,582, which is based on normal employment of 25,318.

Considerable improvement shows in the average factory hours put in, which indicates less time lost for various causes. For several months the average factory hours have ranged from 48.9 to 50.1 per week on a base of 50 hr. Several exceptions were due to holidays. For instance, the Good Friday holiday cut the week ended March 31 to 43.9, or 89.6 per cent. The week ended March 24 showed 50.1 hr., or a percentage of 100.2. This generally satisfactory condition of 100 per cent or better on average factory hours has been prevalent for some months, showing less labor turnover and less time out for illness, personal affairs, etc.

General Refractories Co. to Take Over American Refractories Co.

Negotiations for the purchase of the American Refractories Co. by the General Refractories Co. have been concluded and the merging of the two companies now awaits only the formal approval of the stockholders of the two companies. By this purchase the General Refractories Co. brings its annual capacity to about 300,000,000 brick and makes it the second largest producer in the country. The purchase adds particularly to the company's silica and magnesite brick capacity, as the American company has not been a big producer of clay fire brick. It has plants in Danville and Joliet, Ill., and Baltimore, the combined capacity of which is approximately 36,000,000 brick annually. It also has foreign magnesite properties, but it is stated that these are not involved in the deal. Plants of the General Refractories Co. are located at Sproul, Sandy Ridge, Mt. Union, Karthaus, West Decatur and Mill Hall, Pa., Hitchins and Olive Hill, Ky., and Joliet, Ill.

Sale of Steel & Tube Co. of America Still Delayed

The preliminary injunction restraining the sale of the Steel & Tube Co. of America to the Youngstown Sheet & Tube Co. will remain in effect until a final hearing can be held, according to an opinion handed down by Chancellor Hosiah Wolcott, in Wilmington, Del. The injunction was issued several weeks ago at the request of the Allied Chemical & Dye Corporation, which holds a 20 per cent. interest in the Steel & Tube Co. of America and which is opposing the merger on the ground that the terms are unfavorable.

Makers of steel mill rolls advanced prices $10 per ton as of April 1, but with the advance in the new roll prices there has been an increase of $10 a ton in the allowance on old rolls. There is, therefore, no increase in the net cost of the rolls to the steel manufacturers, but roll makers will now get old rolls which recently have been broken up and melted or sold by the mills as scrap.

REPAIR OF DIES BY WELDING

Arc Process Used on Forging Dies and Plate Shear Blades—Substantial Economies Claimed

BY A. M. CANDY*

SUPERINTENDENTS and foremen of drop forging and similar shops making use of steel blanking dies have been in the need of a satisfactory "putting on" tool, to take care of chipped and broken edges of dies which have a rapid rate of deterioration, especially in certain forging operations. The ability to withstand the stresses imposed upon this material had made us skeptical in the past about applying the metallic electrode arc welding process for reclaiming damaged dies. Recently, however, we have found that such dies when properly prepared and welded show a sufficient increase in length of life to more than pay for the cost of the welding operation.

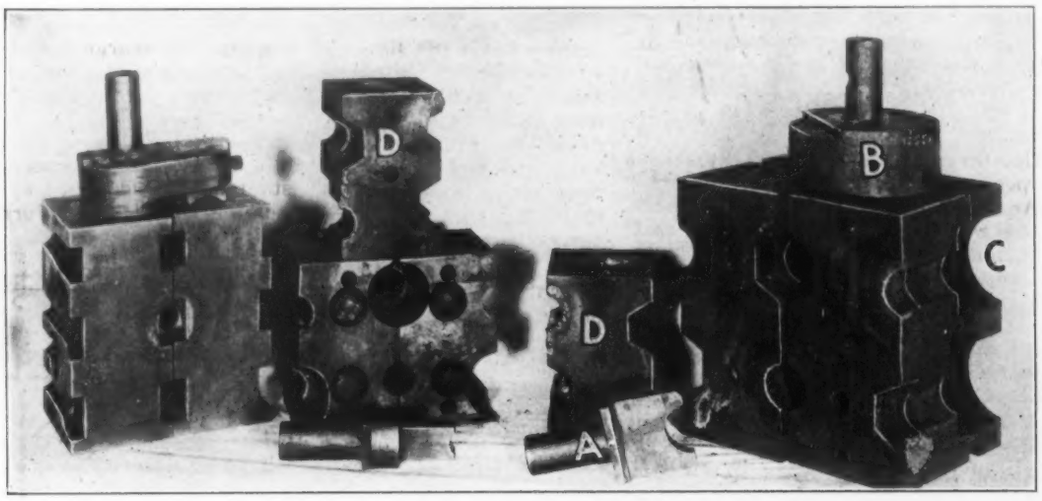
A group of blanking dies used in forming eye rods and bolt heads, which were successfully repaired is shown in Fig. 1. At "A" is an eye forming plunger used in connection with a die for forming the blank ends for eye rods. This was broken diagonally across the center of the flat portion, commencing about at the middle of the circular groove at the end. The broken piece was welded to the main body and ground up, making the piece quite as good as new. The line of the weld can be discerned by the slightly darker area running diagonally across the front face of this plunger. The set of dies at "C" is used for forming the hexagonal heads for large bolts. These dies have a tendency to break off at the edge of the openings for forming the heads, which openings have been welded and ground and filed to the proper contour as indicated. A pair of dies of this type is worth from $35 to $50, and the cost of reclaiming is, as a rule, from $5 to $10, depending upon the extent of the damage to the die. The life of the welded die will be from 50 to 80 per cent of that of a new die.

The piece at "B" is the cup portion of a die used for forming the hexagonal head of a bolt and is also subject to chipping along the edge. It can be repaired in a few moments by the arc welding process. The pieces at "DD" are the two portions of a similar hexagonal-head bolt forming die which have been repaired, the illustrations showing the pieces before the arc deposited metal has been ground and filed to the proper contour. The other specimens shown in Fig. 1 are similar dies which have been salvaged for further service by the same operations.

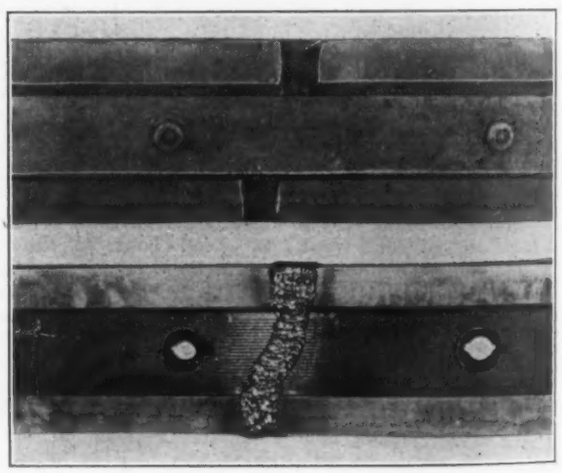
All of this welding work is performed by the metallic electrode welding process, using a special high carbon welding wire which will show an analysis of approximately 1 per cent carbon and about 0.6 per cent manganese. The metal deposited by the arc when using this wire will show an analysis of approximately ½ per cent carbon and approximately 0.30 to 0.35 per cent manganese. The deposited metal is not quite as hard as the original die material but it is sufficiently hard to withstand the service and show a very satisfactory life. There is actually an advantage in not having the deposited metal quite so hard because it is much easier to dress up the welded portions to the proper dimensions and shape. This can be done conveniently by grinding as much of the metal as possible and then finishing up with a very fine file.

Plate Shear Blades Reclaimed

A similar application of the arc welding process is that of repairing a broken shear blade of a large plate shear. Fig. 2 shows a portion of such a shear blade the total length of which is 120 in., the width approximately 8 in., and the thickness 1½ in. The breaking of this blade was caused by the breaking of the liner which is placed back of the upper edge of the blade, and a piece of the liner becoming separated. This concentrated the loading on the shear blade at a single point approximately 2 ft. from the end of the blade. To prepare the blade for welding the two pieces were beveled off at an angle of approximately 45 deg. along the line of the break. The two pieces were then clamped together by means of strips bolted through the holes in the shank of the blade. The welding work at the exposed portion of the break was then carried on until both edges of the blade were filled up. After this the clamping strips were removed and the welding at the web of the blade was completed. Very careful operation was required in doing this welding work, it being necessary to turn the blade from side to side so as not to concentrate the welding work on any one side for too great a length of time. In this manner, the alinement of the blade was held so close that it was impossible to see any misalinement by sighting along the edge of the shear blade.



Forging Dies Which Were Successfully Repaired by the Arc Welding Process Are Shown In Fig. 1, at the Left. The life of reclaimed dies varies from 50 to 80 per cent of new dies. The process was also applied economically to shear blade shown in Fig. 2, below



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This blade has been in continuous service, cutting ¼, ⅜, and ½ in. plate material, operating day and night for 60 days, and the first cutting edge is yet in very satisfactory shape. The blade, of course, has four cutting edges and therefore the total life of the welded blade will undoubtedly run into several months time.

A shear blade of this type costs approximately $150. The time required to prepare the blade for the welding work was approximately 6 hr. and the welding time for the operation was approximately 3 hr. The total cost, therefore, for completing the job, including overhead and all details, was well under $20. The finished weld in the shear blade is shown in Fig. 2. Before putting into service the cutting faces and edges were ground to a true surface to conform to the remainder of the blade.

The success of the welding operations on these dies and the shear blade opens up a new and profitable field for the application of the electric arc welding process.

VIOLENCE DENOUNCED

Operators' Committee Describes Methods of United Mine Workers

WASHINGTON, April 10.—Of the many and difficult problems faced by the United States Coal Commission, easily the most obstinate is that concerning the relationship between operators and the United Mine Workers of America. This age-old labor problem actually seems to be growing more acute and manifestly concern over it is not confined to the two immediately contending sides, but affects the entire country, including the public generally and the iron and steel and other great consuming sources.

Indicative of the bitterness between operators and the United Mine Workers were the letter and general brief on the policy and methods of the United Mine Workers of America submitted last Thursday to the Coal Commission by the Bituminous Operators' Special Committee, in reply to a request of the commission asking for a statement of specific charges and evidence of violation of the rights of American citizens in the coal industry. The document was prepared by Attorneys Henry L. Stimson and Goldthwaite H. Dorr. It declares that the committee is speaking for nearly 70 per cent of the commercial production of bituminous coal. The sweeping character of the charges made against the United Mine Workers is shown when it is stated that it charges the labor organization with massacre, arson and insurrection.

Vital Importance

"Taken as crimes of individuals against individuals, these acts of assassination and destruction are not important to the present investigation of this commission," says the committee's letter. "But they are vitally important to it in their aspect of weapons of attack used by the United Mine Workers of America in its effort to monopolize mine labor in the United States. To effect that monopolistic purpose, a system has been created which forbids under peril of death any man from working in a mine unless he is a member of that organization and submits to the deduction from his pay of the dues and assessments which it exacts; which seeks to destroy any organization of mine laborers other than itself; which seeks to drive out of the industry by violence and destruction of his property any operator who is unwilling to limit his employees to members of this organization; and which seeks to obstruct or overawe any effort of civil authority to enforce the law against violence. We are prepared to show your commission that such a system has been created by the United Mine Workers of America, and that it is today seeking to accomplish its monopolistic purpose by these methods throughout each of the states where bituminous coal mining is conducted.

Tribute on Other Workers

"Furthermore, we are prepared to show you that this organization levies tribute through its monopoly on the workers of every other trade and business in the country and upon every consumer by maintaining through its organized power rates of pay practically double the rates for similar work in other trades, and so attracting, keeping and supporting in the coal industry, as your commission has indicated an army of some 200,000 superfluous coal miners. We are prepared to show that in this way, and in order to accomplish this monopoly, this organization through its use of the nation-wide strike has the public at its mercy."

The committee disclaims any attack on the principle of collective bargaining or on the labor union as such. It is insisted, however, that the present national policy of the United Mine Workers of America constitutes the principal reason for the condition of the coal industry today and for the interruptions to its ability to render fair service to the consuming public.

Specific Allegations

It follows its letter with specific charges and acts of violence, attributed to the policy of the United Mine Workers, and expresses the belief that the commission will agree that the subjects discussed are of such importance that they deserve immediate investigation. Occasion is taken to state that the operators "do not mean for an instant to be understood as attacking the rank and file of the United Mine Workers of America. . . . The worst wrong worked by the leaders of this monopolistic conspiracy has been to substitute for normal American standards a false loyalty to organization and class which has so perverted the normal instincts of normal men that Straitsville, Cliftonville and Herrin follow as the natural and inevitable consequences. These consequences will continue to follow until this monopoly is curbed."

Counter Charges Expected

The action of the coal operators in attempting to make out a case against the United Mine Workers will be followed by the latter in filing counter-charges against the coal operators, and it is taken for granted that this broadside will also be severe in character. Because of this constant contention, it is plainly a matter of grave concern to the commission as to how the coal-consuming public is to fare. It is seriously doubted that the commission is prepared to recommend legislation calling for compulsory settlement of labor disputes. Whether or not it might, as it has been suggested, adopt a so-called moral code, under which the operators and mine workers might proceed, remains to be seen, but it is admittedly true that the efficacy of this plan is also seriously doubted. There have been recurring reports that some form of Government control or operation may be forced, and this was hinted at by the Coal Commission itself in its preliminary report, but it seems evident that the Administration desires to avoid this step if there is any possible avenue of escape.

Blairs Retire from the Elliott-Blair Steel Co.

George D. Blair, president, and George D. Blair, Jr., assistant secretary and assistant treasurer Elliott-Blair Steel Co., New Castle, Pa., have sold their interests in the company to the Elliott interests, consisting of N. W. Elliott, Thomas C. Elliott, Mrs. Martha Elliott, R. J. Elliott and Elmer E. Elliott. The company has plants at New Castle and at Mercer, Pa., and is capitalized at $500,000. It was organized in 1893. George D. Blair, Sr., became affiliated with the concern in 1898, and has been president since that time. Neither Mr. Blair nor his son has any definite plans for the future at present.

Summer courses in engineering subjects are announced by the Carnegie Institute of Technology, Pittsburgh, to start June 25.

SHEET STEEL EXECUTIVES

Convention at White Sulphur Springs Will Consider Important Subjects

A convention of sheet steel executives, designated as the first annual convention, will be held at Hotel Greenbrier, White Sulphur Springs, W. Va., April 16 to 19 inclusive. The program arranged by the National Association of Sheet and Tin Plate Manufacturers has just been given out. The purpose of the convention is stated to be "for careful study, joint consideration and discussion of vital problems affecting the sheet steel industry; also to widen and deepen the friendship within its circle." The convention will open with a dinner on Monday evening, April 16, while the business of the convention will start Tuesday morning, April 17. Under the subject of administration, there will be addresses by W. S. Horner, president National Association Sheet and Tin Plate Manufacturers, on "The Sheet Steel Industry;" William U. Follansbee, president Follansbee Bros. Co., Pittsburgh, on "The Need and Respect for Company Policies;" by A. M. Oppenheimer, president Apollo Steel Co., Apollo, Pa., on "Human Relations;" by George Bartol, president Otis Steel Co., Cleveland, on "Executive Responsibilities;" by Severn P. Ker, president Sharon Steel Hoop Co., on "General Forecast of Business."

On Wednesday morning, under the general heading of production, C. L. Patterson, secretary Bureau of Labor, National Association Sheet and Tin Plate Manufacturers, will give an address on "If Labor Is Not to Be Had Through Immigration, Then Where and How?" while Samuel Davey, vice-president Mansfield Sheet & Tin Plate Co., Mansfield, Ohio, has taken for his subject "Tonnage Rates;" Arthur H. Young, manager industrial relations, International Harvester Co., Chicago, will talk on "Constructive Management Problems;" and Philip Stremmel, general superintendent National Enameling & Stamping Co., will talk on "Training of Men."

Thursday morning the subjects to be presented under the general heading of distribution, include one by G. H. Charls, on "Trade Extension Through Advertising;" R. C. Phillips, secretary American Rolling Mill Co., Middletown, Ohio, on "Foreign Trade;" C. L. Hadly, general manager of sales Alan Wood Iron & Steel Co., Philadelphia, on "Standardization of Selling Policies and Distributing Methods;" Thomas D. McCloskey, general consul National Association of Sheet and Tin Plate Manufacturers, on "Recent Important Decisions Affecting State Registrations."

There will be golf matches on the afternoons of Tuesday, Wednesday and Thursday while the program for the entertainment of the women in the party is to be announced daily.

Technical Program for the Foundrymen's Cleveland Convention

The complete technical program for the sessions of the Cleveland convention of the American Foundrymen's Association, April 28 to May 3, has been announced by the program committee. A feature of this program are the sessions on new developments in the foundry industry, which it is believed will bring out some interesting information. The sessions as a whole are not as crowded as those given at Rochester. The details are as follows:

MONDAY, APRIL 30.

2 p. m. (1) *Non-Ferrous—Aluminum and Aluminum Alloys*—Joint session with Institute of Metals Division A. I. M. E.

"Linear Contraction and Shrinkage of Some Aluminum Alloys," by R. J. Anderson, Bureau of Mines, Pittsburgh.

"Aluminum and Light Alloys," by M. de Fleury, France—annual exchange paper of Association Technique de Fonderie.

"Casting Aluminum Radiator Shells," by W. A. Mills, Alloy Foundry & Machine Corporation, New Rochelle, N. Y.

2 p. m. (2) *Steel Foundry Session.*

"Operation of Basic Electric Furnaces," by M. W. Carruthers, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

"Production of Light Steel Castings for Ordnance Work," by Major Minton, Ordnance Department, U. S. A., Watertown Arsenal, Watertown, Mass.

"Heat Generation in Open Hearth Practice," by A. D. Williams, Cleveland.

Report of committee on specifications for steel castings.

"Centrifugal Casting of Steel," by Wm. McConway, McConway & Torley, Pittsburgh.

TUESDAY, MAY 1.

9.30 a. m. (3) *Industrial Education—Symposium on Training Foundry Workers.*

W. F. Simon, apprentice division, Industrial Commission of Wisconsin, Madison, Wis.

L. A. Hartley, Nebraska Department of Vocational Education, Lincoln, Neb.

C. M. Morrin, Brown & Sharpe Mfg. Co., Providence, R. I.

A. B. Mays, University of Illinois, Urbana, Ill.

J. Grennan, University of Michigan, Ann Arbor, Mich.

A. L. Williston, Wentworth Institute, Boston, Mass.

L. W. Klein, Coxe Traveling Grate Co., Port Carbon, Pa.

H. A. Frommelt, Falk Corporation, Milwaukee.

O. W. Potter, University of Minnesota, Minneapolis.

F. W. Kirby, Deere & Co., East Moline, Ill.

E. A. Parker, Springfield Aluminum Plate & Casting Co., Springfield, Ohio.

9.30 a. m. (4) *Non-Ferrous Foundry Practice*—Joint session A. F. A. and Institute of Metals Division, A. I. M. E.

"Notes on the Proper Pouring and Melting of Brass and Bronze," by F. L. Wolf and W. Romanoff, Ohio Brass Co., Mansfield, Ohio.

"Casting Bronze Tablets," by Jacob G. Kasjens, Brass Foundry Co., Peoria, Ill.

"Present Status of Crucible Making," by B. L. Berkey.

"Contraction and Shrinkage of Non-Ferrous Alloys," by R. J. Anderson, Bureau of Mines, Pittsburgh, and E. G. Fahlman, National Smelting Co., Cleveland.

"Effect of Heat Treatment on Release or Stress in Bronze Castings," by R. J. Anderson, Bureau of Mines, Pittsburgh, and C. L. Eldridge, Metropolitan Museum of Art, New York.

2 p. m. (5) *Sand Research—Testing Methods.*

Reports of joint committee of A. F. A. and National Research Council on molding sand investigation.

"The Cohesiveness Test of Foundry Sands," by Dr. H. Ries and C. M. Nevin, Cornell University, Ithaca, N. Y.

"A Physical Test for Foundry Sands," by Eugene W. Smith, Crane Co., Chicago.

WEDNESDAY, MAY 2.

9.30 a. m. (6) *Sand Research, Reclamation, Conservation and Geological Survey Work.*

Report of sub-committees of joint committee of A. F. A. and National Research Council on molding sand investigation.

2 p. m. (7) *Malleable Session.*

"Application of Fuel Oil to the Malleable Air Furnace," by A. V. Landschoot, Iowa Malleable Iron Co., Fairfield, Iowa.

"Hardened and Tempered Malleable Castings," by E. D. Smith, Lakeside Malleable Co., Racine, Wis.

"Tunnel Kiln for Annealing Malleable Castings," by Philip Dressler, American Dressler Tunnel Kiln, Inc., Cleveland.

"Malleable Iron Cast in Small Quantities," by S. J. Felton, Ohio Mechanics Institute, Cincinnati.

"Methods of Checking Scraps," by E. D. Halsey, Terra Haute Malleable & Mfg. Co., Terre Haute, Ind.

2 p. m. (8) *New Developments in the Foundry Industry.*

"Centrifugal Casting of Iron Piston Rings," by John A. Rathbone, Detroit.

"Centrifugal Castings," by Leon Cammen, New York.

"The Desulphurization of Cast Iron," by Dr. Richard Moldenke, Watchung, N. J.

Address by Dr. Percy Longmuir, Institute of British Foundrymen.

Report of committee on corrosion of cast iron.

Report of committee on pattern standardization.

THURSDAY, MAY 3.

3.30 a. m. (9) *Steel Foundry Practice.*

"Heat Treatment of Alloy Steel Castings," by H. A. Lorenz, Bucyrus Co., South Milwaukee, Wis.

"Annealing Steel Castings," by H. A. Neel, Michigan Steel Casting Co., Detroit.

"Core Mixtures for Light Steel Castings," by C. S. Koch, Fort Pitt Steel Casting Co., McKeesport, Pa.

Report of committee on refractories.

Report of committee on heat treatment of ferrous castings.

9.30 a. m. (10) *Gray Iron Session.*

"Notes on Gray Iron for Automotive Castings," by H. B. Swan, Cadillac Motor Car Co., Detroit.

"Carbon in Cast Iron," by J. W. Bolton, Niles Tool Works, Hamilton, Ohio.

Report of committee on specifications for cast iron.

"Visual Observation of Melting in a Cupola," by John Grennan, University of Michigan, Ann Arbor, Mich.

2 p. m. (11) *New Developments in the Foundry Industry.*

"Gray Cast Iron from the Point of View of the Electric Furnaces," by G. K. Elliott, Lunkenheimer Co., Cincinnati.

"Electric Furnaces from the Managers' Standpoint," by L. F. Barton, Dibert, Bancroft & Ross, Ltd., New Orleans, La.

"Manufacture of Synthetic Foundry Iron in the Electric Furnace," by C. E. Sims, C. E. Williams and B. M. Larsen, Northwest Experiment Station, U. S. Bureau of Mines, Seattle, Wash.

"A New Life Long Mold Development," by Dr. Richard Moldenke, Watchung, N. J.

GEAR MAKERS' MEETING

Program of Annual Meeting to Be Held in Cleveland Next Week

Program of the seventh annual meeting of the American Gear Manufacturers Association to be held in Hotel Cleveland, Cleveland, April 19, 20 and 21, calls for meetings of committees the morning of April 19, and the first general session of the meeting after luncheon. Reports of committees and sub-committees will take up most of the afternoon session which will close with an address by E. C. Smith, chief metallurgist Central Steel Co., Massillon, Ohio, whose subject is "What Does the Microscope Tell Us?" At an informal dinner that evening R. D. Holding, Jr., Brown & Sharpe Mfg. Co., Providence, will speak on "One Half Hour in the Far East." At the second general session later in the evening E. J. Lees, Lees-Bradner Co., Cleveland, will speak on "Grinding and Measuring Involute Gear Teeth."

On the morning of April 20, following the election of five members of the executive committee, Wilfred Lewis will discuss the "Gear Testing Machine." The afternoon will be given over to sightseeing and there will be a meeting of the executive committee. At an informal banquet in the evening, President F. W. Sinram, presiding, the principal speakers will be the Rev. F. S. White, Dean of Trinity Episcopal Cathedral, Cleveland, whose subject as announced is "What Happened to the Shot, the Sound of Which Went Round the World?" and Col. L. P. Ayres, vice-president Cleveland Trust Co., Cleveland, who will speak on "How Long Will Prosperity Last?"

The program for April 21, includes a paper by K. L. Hermann, Studebaker Corporation, "Tooth Forms of Automobile Gears after Cutting, Hardening and Grinding;" discussion by the automotive group "Conditions in the Industry" under the leadership of A. W. Copland, Detroit Gear & Machine Co.; a paper on "Industrial Relations" by Frank A. Scott, president Warner & Swasey Co., Cleveland; a talk by Owen A. Locke, treasurer Tillotson Wolcott Co., Cleveland, "Some Thoughts of an Investment Banker on the Gear Business;" "Practical Value of Cost Accounting," by O. C. Kiehne, Van Dorn Electric Tool Co., Cleveland; "Hit and Miss Cost Accounting and Estimating," by A. F. Cooke, Fawcus Machine Co., Pittsburgh; a round table of the industrial group on "Conditions in the Industry," with George L. Markland, Jr., Philadelphia Gear Works, presiding.

Gives Money for Research

A gift of £100,000 for scientific research has been made by Sir Alfred Yarrow to the Royal Society, England. The benefaction is for the same purpose as that of Ambrose Swasey, Cleveland, which made possible the organization of the Engineering Foundation in America.

That the prosperity of England has been hampered for the want of better promotion of scientific investigation and its application to practical affairs was voiced in the text of the offer to the Royal Society. "The birth of new industries and the development of existing ones," it was said, "are due largely to the growth of science, thus securing employment and the welfare of the whole community being advanced." The gift is to be used as capital or income for the purposes of the society, as the council may think fit.

Sir Alfred Yarrow is known as a pioneer in the design and construction of high speed vessels, such as torpedo boat destroyers and of vessels for the navigation of shallow waters. He is an honorary member of the American Society of Mechanical Engineers.

Bituminous Coal Production

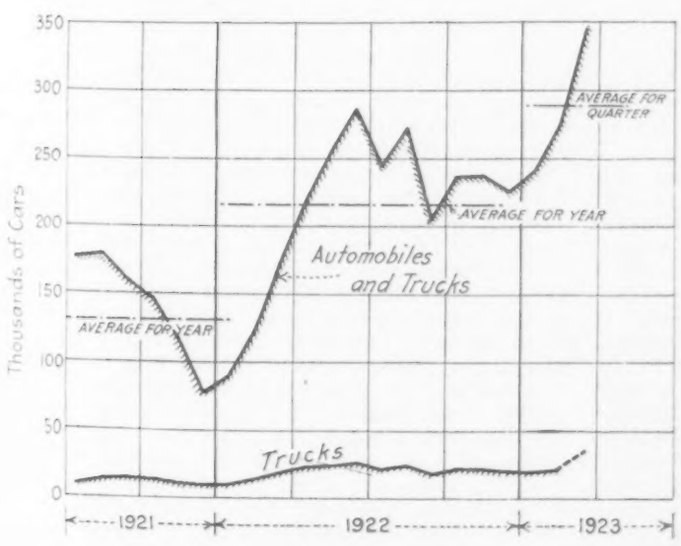
WASHINGTON, April 10—Production of bituminous coal for the week April 2-7 is estimated by the Geological Survey at about 9,500,000 tons. The reduced output was due to a double holiday, the 8-hr. day and Easter Monday. Preliminary estimates indicate that the total output of soft coal during the coal year ended March 31, 1923, was 419,710,000 net tons.

The production during the four coal years preceding was as follows (in net tons): 1918-1919, 552,679,000; 1919-1920, 484,196,000; 1920-21, 524,208,000; 1921-22, 434,754,000.

It will be seen that from the viewpoint of soft-coal production the coal year 1922-23 was 3.5 per cent behind 1921-22; 19.9 per cent behind 1920-21; 13.3 per cent behind 1919-20, and 24.1 per cent behind 1918-19.

Of the estimated production of 407,894,000 tons of bituminous coal for the calendar year 1922, 105,000,000 tons were credited to Pennsylvania; 81,000,000 to West Virginia; 59,100,000 to Illinois and 40,000,000 to Kentucky.

Some 340 employees of the Walworth Mfg. Co., Boston, recently gave a complimentary dinner to Howard Coonly in celebration of the tenth anniversary of his election to the presidency of that corporation.



Monthly Production of Automobiles in the United States

New Automobile Production Record

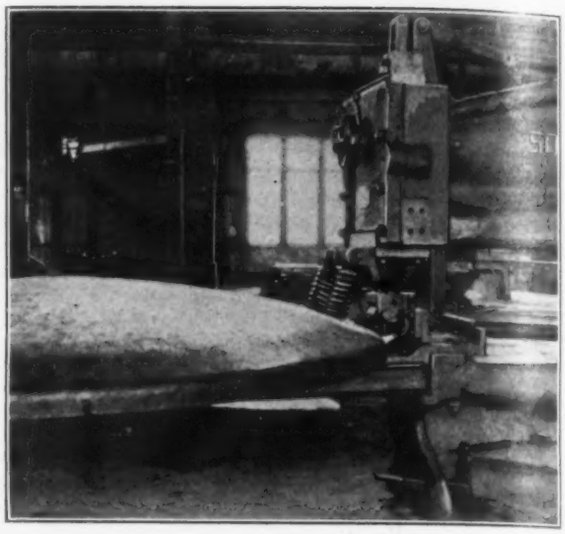
PRELIMINARY figures for the output of automobiles and trucks in March, issued by the National Automobile Chamber of Commerce, show a total of 346,383 units. This is larger by more than 57,000 than the highest previous month's production (June, 1922) in the history of the industry. Incidentally, it is far larger than the output of automobiles in the whole year 1911 or in any preceding year, and is not far below the production of 1912.

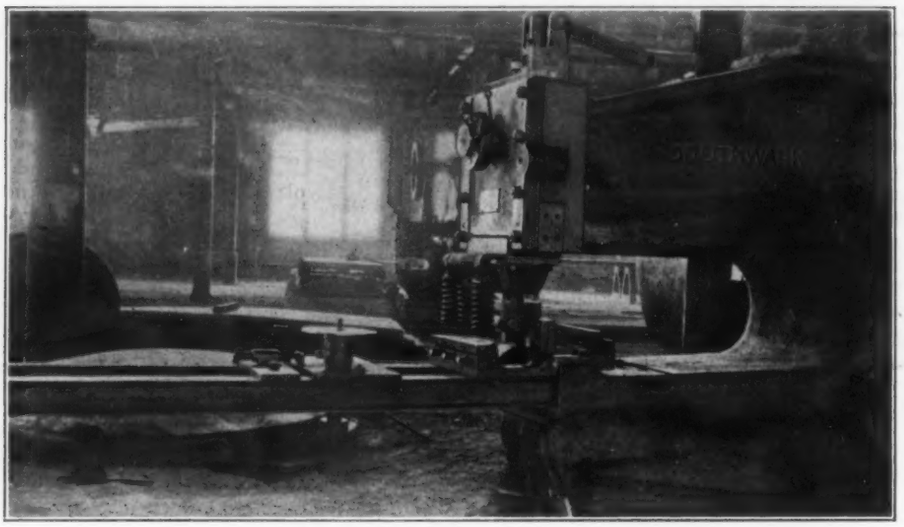
For the first three months of the year production is placed at 867,628 cars and trucks, which is more than double the 386,195 for the first quarter of 1922. The first quarter's production is at the rate of almost 3,500,000 cars in the year, but it is anticipated that the final amount will be not far from 3,000,000. This compares with a total of 2,577,938 cars for 1922, which was the greatest production in any year. About 10 per cent of the March figures were trucks.

NEW FLANGING EQUIPMENT

Attachment for Punch Press Adapted for Flanging Circular Plates—Reduced Costs a Feature

To provide efficient and economical equipment, which because of its low cost is available to shops of all classes, the Southwark Foundry & Machine Co., Philadelphia, has developed the flanging machine shown in the accompanying illustrations. For the flanging of steel plates the larger boiler and tank shops commonly employ hydraulic presses and pneumatic machines. Small steel plate fabricating shops, however, have had to resort instead to the manual work of skilled flanging smiths. The Southwark machine is in the form of an attachment designed for use with power punch presses and is particularly adapted for circular work. It is rated to flange up to ½ in. cold soft steel plates 10 ft. and less in diameter. The actual flanging capacity is considered as limited only by the capacity of the punch press used. The machine is of simple design and may be operated by unskilled labor.





Flanging Attachment for Use with Power Punch Press and Designed for ½-In. Plates 10 Ft. and Less in Diameter. The flange is turned by segments in two or three operations depending on the depth required. The components of the attachment may be seen in view at left and the actual flanging of a head above. The flanging of a 50-in. head from ¼-in. plate, 54 in. in diameter, with the flange 2¼ in. deep, is done in about 8 min., not including time for mounting and dismounting the plate

The device turns the flange by segments in two or three operations or steps depending on the depth required. The machine operates at moderate pressures applied at a high rate, rather than under great pressures at a slow rate, as in hydraulic presses. The bending or flanging pressure is applied with every stroke of the punch press through the flanging tool, which consists of a rotary mounted roller acting normally to the flange and designed to maintain the proper mechanical bending condition with minimum of friction. The flanging ram reciprocates in unison with the spring clamps, both being actuated by the punch ram. On the downward stroke of the latter, the plate is clamped automatically against the die, and immediately followed by the flanging tool, and automatically released in the reverse order on the upward stroke.

The components of the device are the flanging ram and spring clamps; the lower forming die and guides, bolted to the lower jaw of the punch; the carriage bed, made up of two structural beams forming an extension of the lower jaw of the punch; and the center carriage for supporting and rotating the circular plates to be flanged. The operation of the machine may be best understood perhaps from an actual application. Assuming, for example, that from a plate 54 in. in diameter and ¼ in. thick it is required to flange a head of 50 in. outside diameter, the flange to be about 2¼ in. deep, the process would be as follows: The center carriage is set at a radius of 25 in. from the flanging tool, and the forming die adjusted for a plate ¼ in. thick. The plate, which has been bored at the center to fit, is then mounted on the arbor of the center carriage. The clamping device and flanging roller are then lowered to the starting positions of ½ in. and ¾ in., respectively, above the plate.

The machine is now set for the first operation, which will turn the flange through an angle of about 40 deg. and the reciprocating motion of the clamping device causes automatic flanging and releasing of the plate. When released the operator rotates the plate and feeds new segments under the flanging tool. The process is continued until the first operation is completed, after which the flanging tool is lowered 1¼ in. to a new starting position and the second operation is performed and the head finished. When flanging a dished head the center is raised to correspond with the depth of the dish. The spring clamps are set to engage the plate normally at the point of contact. In dished heads, it is pointed out, the use of clamps is not essential to prevent buckling, but their use is recommended for clamping the plate while the roller is in contact with the flange.

The rate of production depends on the diameter of the head and the depth of the flange. Two operations are required to turn a 2½ in. flange and three for a flange 4 in. deep, using the company's No. 5 punch press. Flanging of the 50-in. heads described is said to be done in about 8 min. and a head 9 ft. in diameter with about a 4-in. flange in 26 min. These rates do not include the time required for mounting or dismounting the plate. In some cases it is desirable to turn the flange very gradually, which produces a better quality of cold flanging, and for this the attachment is said to be well adapted.

Explosives Engineer, published at Wilmington, Del., has made its appearance, No. 1 of Vol. 1 being dated March, 1923. It is intended as a magazine for users of explosives and is to be published monthly by the Hercules Powder Co., under the editorship of Harry Roberts, Jr., and N. S. Greensfelder.

Corporation Offer Surprises Washington

Proposal to Quote on Mill Basis Received with Interest—Powers of Interstate Commerce Commission Limited—Cannot Provide Substitute for Pittsburgh Basing Custom

BY L. W. MOFFETT

WASHINGTON, April 10.—The statement made in Chicago by W. W. Corlett, counsel for the United States Steel Corporation, that the corporation would be willing to quote its prices of steel on an f.o.b. mill basis has created interest here. This system of quotation to take the place of the customary Pittsburgh-base plan, as made clear by Mr. Corlett, obviously would not provide for the naming of identical prices by the Steel Corporation at its mills, either in Chicago, Pittsburgh, or other sections of the country. Consistent with its contentions throughout the Pittsburgh hearings, the position of the Steel Corporation plainly is that the matter of actual prices is dependent upon the law of supply and demand. At the same time the proposal to change the basis of quotation appears to have come as a surprise to the commission. However, no official comment was forthcoming regarding the suggestion.

This is quite natural, when it is recalled that the commission has authority only to issue an order to cease and desist. In other words, it could direct the Steel Corporation not to use the Pittsburgh base as a method of quotation. But it cannot say affirmatively that the f.o.b. mill plan would be approved in its place. To do so, it is contended, might be construed as a form of price fixing by the commission and manifestly the commission does not have and does not claim to have authority to fix prices. It is seriously doubted that the commission would make any expression as to the legality or illegality of a sales policy established upon an f.o.b. mill basis. Such a method of quotation, if adopted by the Steel Corporation, it is believed, would have to be followed by independent steel producers of the country and thus inaugurate a fundamental change in the method of price quoting throughout the iron and steel industry of the country.

The practice of quoting on a Pittsburgh basis repeatedly has been defended on the ground that it is a convenience. These defenders say it provides uniformity as to the method of quotation, simplifies the work of making out invoices, and gives a clear idea of the prices of steel. It has been insisted that by no means does it imply uniform prices, but only a common system of quoting prices. To abandon this method, defenders of the custom maintain, would result in chaos and at the same time would not make the slightest difference to buyers in the prices of their delivered steel.

Powers of the Commission

The commission is powerless to provide a constructive substitute for the Pittsburgh base, if the latter policy were actually abandoned. This only reflects the limitations placed upon the commission. It shows that even if it were inclined to do so, it cannot provide the iron and steel industry with helpful aid in case the Pittsburgh-base plan were abated. Congress has granted the commission power to prevent existing practices, which the commission might consider unfair, but has gone no further. This emphasizes the criticism so frequently heard that the power of the commission is negative rather than affirmative.

This point reaches out to a consideration of the powers of the commission generally. It is interesting to observe what they have been, where they have been limited, and what they contemplate as reflected in cases pertinent to the iron and steel and non-ferrous metal industries. Of outstanding importance to these industries, as well as to the industrial interests of the country generally, are the proceedings in the Claire Furnace case. The outcome of the decision by the Supreme Court in this proceeding will vitally affect the important questions it involves as well as the future conduct of the commission itself.

As is well known, the proceeding in the Claire Furnace case, like that in the Maynard Coal Co. case, was instituted under section six of the Federal Trade Commission act, which embraces the economic field of the commission. The question involved is whether the commission is authorized to require data from companies showing cost of production, etc. The commission endeavored to obtain the cost of production of coal and steel for the information of Congress and was prevented by injunction obtained by the coal and steel companies in the courts of the District of Columbia, which held in effect that the production of coal and steel was intrastate and for that reason a Federal agency could not require the companies to furnish the information sought. These cases are of extreme importance. Not only is this so from a constitutional point of view. It also involves the question as to the right of Congress to require, through its administrative agency, business interests of the country to disclose costs upon which Congress undoubtedly would seek to legislate.

The Injunction Method

The injunction processes have effectively stopped the work of the commission in gathering costs. It is well known that the commission has strong hopes that the Supreme Court of the United States will reverse the decisions of the lower courts in the Claire Furnace and Maynard Coal cases, thus compelling industries of the country to provide the commission the cost figures. On the other hand, confidence is expressed by counsel in these cases that it has been clearly demonstrated that the commission does not have the power to require these figures and that Congress itself does not have the power to enact legislation, short of an actual constitutional amendment, giving the commission such authority. However, this is not the attitude of the commission and if the latter should be defeated in the Supreme Court, it is altogether likely that it will apply to Congress for an amendment to the laws which govern it, to overcome adverse court decisions in order to further develop the law of unfair competition. It is the hope of the commission that this decision will be broad enough to cover not only questions raised directly in this case, but also the decisions of lower courts in mandamus proceedings, which have limited the commission.

Supreme Court Ruling

The first case that ever came before the Supreme Court upon a review of an order of the Federal Trade Commission, involving unfair competition, related to the proceedings directed against Warren, Jones & Gratz, which involved the sale of cotton ties and bagging. The commission's order was reversed upon a rule of pleading. The majority opinion, announced through Mr. Justice McReynolds, held that the words "unfair methods of competition" are not definite by the statute and that their exact meaning is in dispute. The court held that these words are clearly not applicable to practices never heretofore regarded as opposed to good morals. In a dissenting opinion, Mr. Justice Brandeis took the view that the commission should be allowed to develop the law of unfair competition in the prevention of unfair methods, holding that the new law was directed to methods of present-day business.

The Federal Trade Commission also has jurisdiction under section seven of the Clayton act, which is di-

rected against the acquisition of stock of one concern of the stock of a competing concern. This action has been reviewed by the Circuit Court in the case of the commission against the Aluminum Co. of America. It was charged by the commission that when the Aluminum Co. took over the Cleveland Metal Products Co., competition had been eliminated, in violation of section seven. The Aluminum company appealed to the United States Circuit Court of Appeals for the Third Circuit at Philadelphia. This court sustained the order of the commission requiring the Aluminum company to divest itself of the stock of the company acquired. The Supreme Court of the United States denied the application of the Aluminum company for a writ of certiorari and consequently the order of the Federal Trade Commission is outstanding. This proceeding is especially interesting as it brought about the first construction of this section of the Clayton act.

The commission also has jurisdiction under the Webb-Pomerene act to aid American business to compete with foreign combinations. American concerns under this act can combine for purposes of export only. Its great weakness lies in the fact that American concerns cannot combine for import business; that is to say, they cannot organize for the purchase abroad of materials to be distributed among them. The advantage in this, of course, would be to give the American interests not only strong influence over the market for these commodities, but also would lower cost prices because of greater volume of goods purchased.

The proceedings of the commission in steel merger cases are well known and have been brought under section five of the Federal Trade Commission relating to methods of unfair competition in domestic trade.

NO GENERAL SHORTAGE

Survey by National Industrial Conference Board Shows Labor Supply Varies Widely Among Industries and States

That there is not so great a labor shortage as is frequently supposed from current reports is indicated in the preliminary results of a survey of the labor supply situation in the United States made public by the National Industrial Conference Board. The board's conclusions are based on returns from a group of more than 1000 manufacturing establishments located in nearly all parts of the United States, and from public employment bureaus throughout the country.

While labor shortages are reported in certain localities and in some industries and trades, the results of the conference board's survey indicate that there are other localities and other trades and industries in which there is no shortage and some in which there is a noticeable surplus of labor.

Employment has been on the up grade since last summer and has shown no drop during the winter months, when a decrease might have been expected. The building industry continues to absorb a large amount of labor. Those in close contact with the employment situation predict an increased demand for labor during the spring and summer due to the opening of outdoor work. The demand for farm labor is expected to increase rapidly, and a shortage of domestic help is also frequently reported. No considerable relief for labor shortages is expected from immigration. Many employers are seeking additional labor and the most hopeful sources reported are Mexican labor, immigration from Canada and the utilization of the available supplies in the border States. There is undoubtedly a surplus of labor in some sections of the country which might considerably relieve the shortage in other sections if it could be successfully distributed. It is the almost universal opinion among those in contact with the situation that some of the unemployed registered at public employment bureaus could be utilized in other localities.

The index of employment of wage earners maintained by the Conference Board shows a steady gain in total employment. March shows a total employment 29 per cent and 31 per cent above the pre-war leval.

Nevertheless, the Conference Board's survey indicates that employment in the United States is by no means up to capacity at the present time. Information received from 1012 manufacturing concerns covering nearly 400,000 wage earners in 23 industries shows that the total employment on March 15 was considerably below the peak of employment for these industries. Three hundred and seventeen of these firms reported labor shortages. In these 317 firms there were 9842 positions unfilled on March 15 due to inability to get workers, which was an increase of 1623 over the number unfilled on Feb. 15 in the same group of establishments. The positions unfilled on March 15 represented 5.6 per cent of the total working forces in these establishments. The shortage of common labor in these establishments amounted to 7.4 per cent, skilled labor 4.1 per cent, female labor 10.1 per cent. The total number of unfilled positions in all the industries reporting compared with the total number of workers employed by them shows that the general shortage amounted to 2.5 per cent. On this basis the shortage of common labor was 4.1 per cent, skilled labor 1.9 per cent and female labor 2.6 per cent.

Improved Swedish Iron Market

STOCKHOLM, SWEDEN, March 20.—The Swedish iron and steel market with an increased foreign demand has improved. In the past year the total ouput amounted to only about 50 per cent of the average of the decade of 1913-1922. The volume of orders for pig iron is now growing considerably, owing to an increased demand from Germany, whose iron supply, on account of the Ruhr occupation, has been so largely shut off. The situation has come as a well-needed stimulant to the Swedish pig iron industry, and the prices paid by German buyers are fairly satisfactory, being only about 12 per cent below those paid by England. The latest quotations of the Swedish Iron Works Association, reduced to English tons of 1016 kg., free on board port of export, and in American dollars, are:

Export pig-iron (max. 0.015 per cent sulphur, 0.025 phosphorus)	$35.74
Billets, over 0.45 per cent carbon	$81.23 to 94.76
Rolled wire, over 0.45 carbon	94.76 to 108.31
Rolled Martin iron, soft, base price	59.67 to 64.98
Rolled Lancashire iron, base price	81.23

Fire Brick in 1921

In the Census Bureau report on the manufacture of brick, tile, fire clay products, etc., are included figures showing that 621,000,000 fire brick were manufactured in 1921, at a total value of $24,832,700, or an average of $40 per M. This compares with 963,400,000 fire brick in 1919, valued at $38,015,800, or an average of $39.46 per M., and with 816,800,000 fire brick in 1914, valued at $16,427,500, or an average of $20.11 per M.

Copper Mining in South Africa

WASHINGTON, April 9.—Reduction operations have been resumed on the Transvaal, Union of South Africa, copper mines, due to the offer of a £5 per ton bounty for copper mined in the Union, to be used in connection with the electrification of certain Natal railway lines. No copper was produced in the Transvaal during the months of April to August, 1922, reports Consul G. K. Donald, Johannesburg.

Following the advice of Governor Pinchot, given when he was chief forester of the United States, to build power plants near the mouths of mines whenever possible, the Penn Central Power Co., Altoona, Pa., a subsidiary of the Penn Central Light & Power Co., which owns power plants in Altoona, Lewistown and other places in Pennsylvania, has purchased 2000 acres of coal land in Broadtop Township, Huntingdon County, from the Kay Coal Co., Everett, Pa. The Penn Central company is erecting a power plant at Saxton, near the coal property, to be operated by water with the coal available to meet emergencies.

Foundry Layout and Material Handling

Quantity Production of Automobile Castings Expedited by Mechanical Means—Development from a Small Foundry to a Large One

BY HENRY M. LANE*

AT Pontiac, Mich., is a plant which is unique in many respects. The Wilson Foundry & Machine Co. has been developed by the Wilson brothers primarily for the production of castings for the Overland and the Willys-Knight cars, though the foundry produces jobbing castings for many other industries, and during the war made many lines of war castings, particularly airplane engine cylinders and gas shells. Eight years ago the foundry was started by the purchase of the old Flanders foundry and machine shop, and these two roof areas today form a part of the regular plant, the expansion having been carried on from the original units until today it ranks among the largest producers of motor car castings in the world.

lurgy and of all the incoming material, but furnishes both the specifications for its purchase, and the analyzing and inspecting of material before it is unloaded and received. The backbone of all general mixtures used in this plant is what is known as No. 2 malleable, and this and several other grades of iron vary somewhat in composition as received. Hence, as each car is analyzed, the material is segregated into groups and piled accordingly, and later the material from these various groups is blended to obtain the desired results in the mix.

Referring to Fig. 1, it will be noticed that this plant is arranged with the incoming sand arriving at one end, next to the core room, and all sand supplies and

Fig. 2—Floor for Producing Cast Iron Rubber Tire Molds

In the general plan of the foundry plant (Fig. 1) the area covered does not include the cleaning room, which is across the tracks in connection with the machine shop. The drawing shows in dotted lines the area of the old Flanders foundry—a mere fragment of the present enlarged structure.

The original foundry purchased eight years ago contained 25,000 sq. ft. of floor space, while the new foundry and core room, as made up of the original and additions, comprises 312,000 sq. ft. The old melting unit, with the trolley system for the delivery of metal from it, are still in use.

This company not only makes automotive castings, but turns out a line of cast iron rubber tire molds. One of the floors for producing these is shown in Fig. 2, with a large Hermann roll-over molding machine in the foreground. The tire molds require a special iron which is melted for them.

The laboratory not only has control of the metal-

cores enter the foundry from this end. The melting stock comes in at the opposite end and one side, and the molten metal is handled to the floor by a series of monorail tracks. Through the foundry there are a number of broad gangways for taking out the product, so that the flow of all material is essentially a straight line, and no back tracking is necessary. The castings are gathered together on trucks which are pulled by a tractor.

One of these trucks is shown at the shakeout conveyor in Fig. 3. The castings are unloaded from the truck by means of an air hoist, and are swung onto a slat carrier. Men standing along both sides of the slat carrier knock off the sprues, and dig out or knock off the principal cores. The slat carrier is continuous through the knockout and through a tunnel under the railroad tracks to a point in the cleaning room proper. The other end of this particular carrier is shown in Fig. 4. As the castings come off from the end of the carrier they are picked up with the tongs on the air hoist shown, and are swung onto a car that takes them to the tumbling barrels or sand blast. The castings shown in these two pictures are the Model 4 Overland

*Industrial engineer, Detroit. The article is taken from a paper "Improved Foundry Practice," read by Mr. Lane before the National Founders Association. The making and handling of cores were treated at page 745, March 15.

Fig. 3—Loading End of Shakeout Conveyor. The castings ar rive from the foundry on the cars as shown, are lifted to the conveyor with an air hoist, the sprues knocked off, and the cores knocked out, by men on both sides of the conveyor

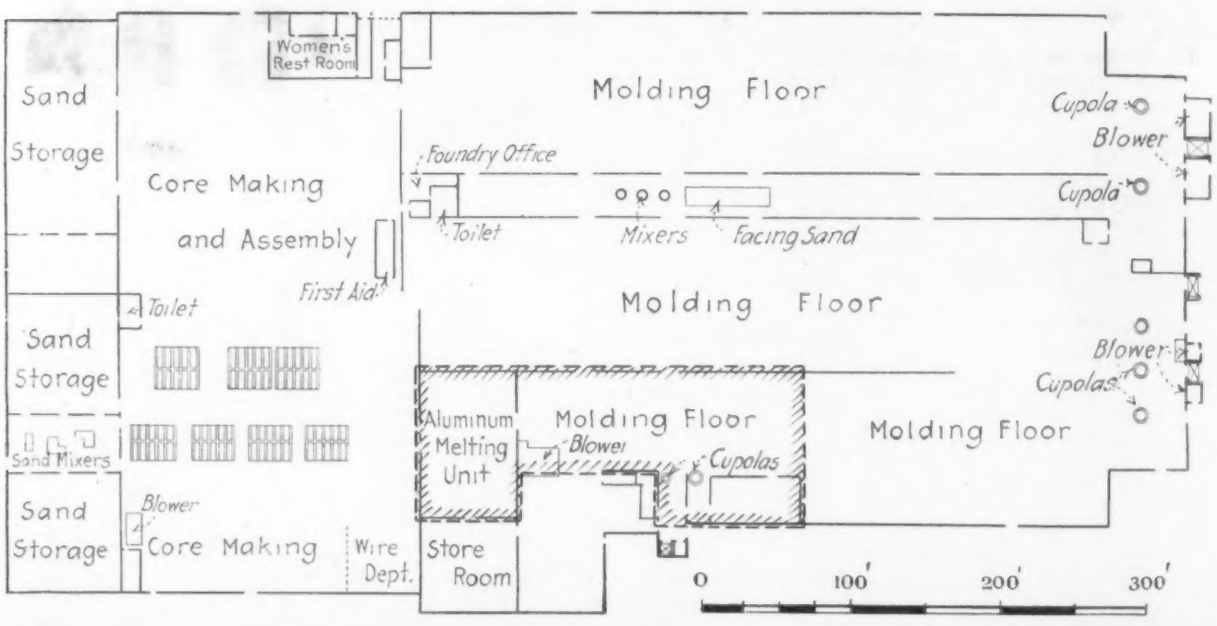


Fig. 1—Plan of Foundry Plant, Wilson Foundry & Machine Co., Pontiac, Mich. The shaded portion shows the area covered by the old Flanders foundry

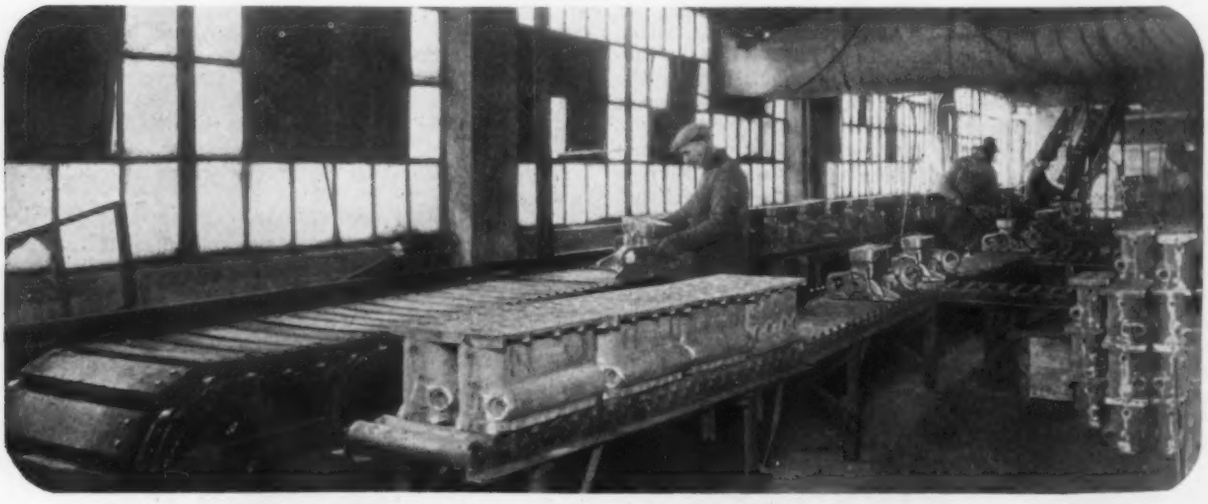


Fig. 6—Slat Carrier Delivering Castings from Foundry to Machine Line-Up

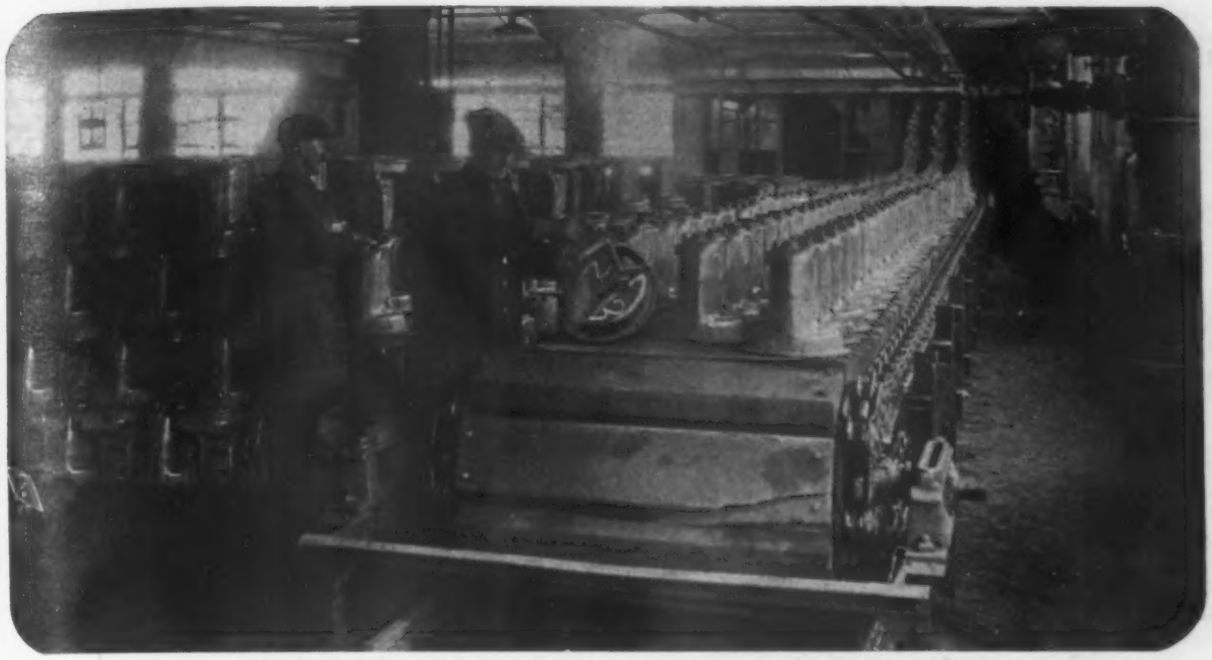


Fig. 7—Slat Carrier Delivering Castings from Foundry to Shipping Platform

cylinders, which were molded on the Beardsley-Piper machine.

The broken cores and sand knocked from the castings are put through the sand reclaiming barrels shown in Fig. 5, and the material taken by bucket elevators to the bins overhead. Two spouts coming down in the front of the picture are for the return of cleaned sand for re-use in the core room, and this sand is drawn into carts and carried to the core room.

On the exterior of this rubbish building are spouts extending from the side of the building and serving to discharge the rubbish directly into cars on the track. With certain core mixes it has been found possible to re-use a certain portion of the sand, while in other cases it is cheaper to recover simply the wires, rods, etc., and send all of the sand to the dump. With the sand handling equipment shown, two men take care of all of the waste sand coming from the knockout.

The tumbling barrels used are of the regular standard type, as is also the sand blast equipment.

Castings, after being cleaned, are chipped and inspected and then are delivered onto the gravity carrier shown in Fig. 6, to a point opposite the slat carrier which takes them up into the machine shop and delivers them to the first unit in the machine line-up. The men in the illustration are performing the final operations and final inspection before the castings go to the machine line-up.

Some of the castings which are not machined in

Fig. 5—Sand Reclaiming Plant

Fig. 4—Discharge End of Shakeout Conveyor

the Wilson plant are sent directly to cars. Fig. 7 shows the slat conveyor for taking transmissions from the cleaning room direct to the loading platform. Such castings as are machined are handled on a progressive layout, each operation following a proper sequence and carriers reducing the labor to a minimum.

REBUILT COATESVILLE STACK

New Midvale Furnace One of the Largest in Country—Bosh 23 Feet

The Midvale Steel & Ordnance Co., Philadelphia, has practically completed the rebuilding of its No. 3 blast furnace at Coatesville, having considerably enlarged it so that it will now rank as one of the largest furnaces in the United States, being exceeded in size by only three or four stacks. The Midvale stack upon completion will have a 19-ft. hearth. This is only slightly smaller than the two largest furnaces of the United States Steel Corporation, one at Ensley, Ala., having a 20-ft., 5-in. hearth and one at South Chicago having a 20-ft., 9-in. hearth. The Trumbull-Cliffs furnace at Warren, Ohio, completed a year or so ago, is still larger, having a hearth measurement of 22 ft., 6 in. The two largest furnaces of the Bethlehem Steel Co. are a stack at Bethlehem, with an 18-ft., 5-in. hearth, and one at Steelton, with a 17-ft. hearth.

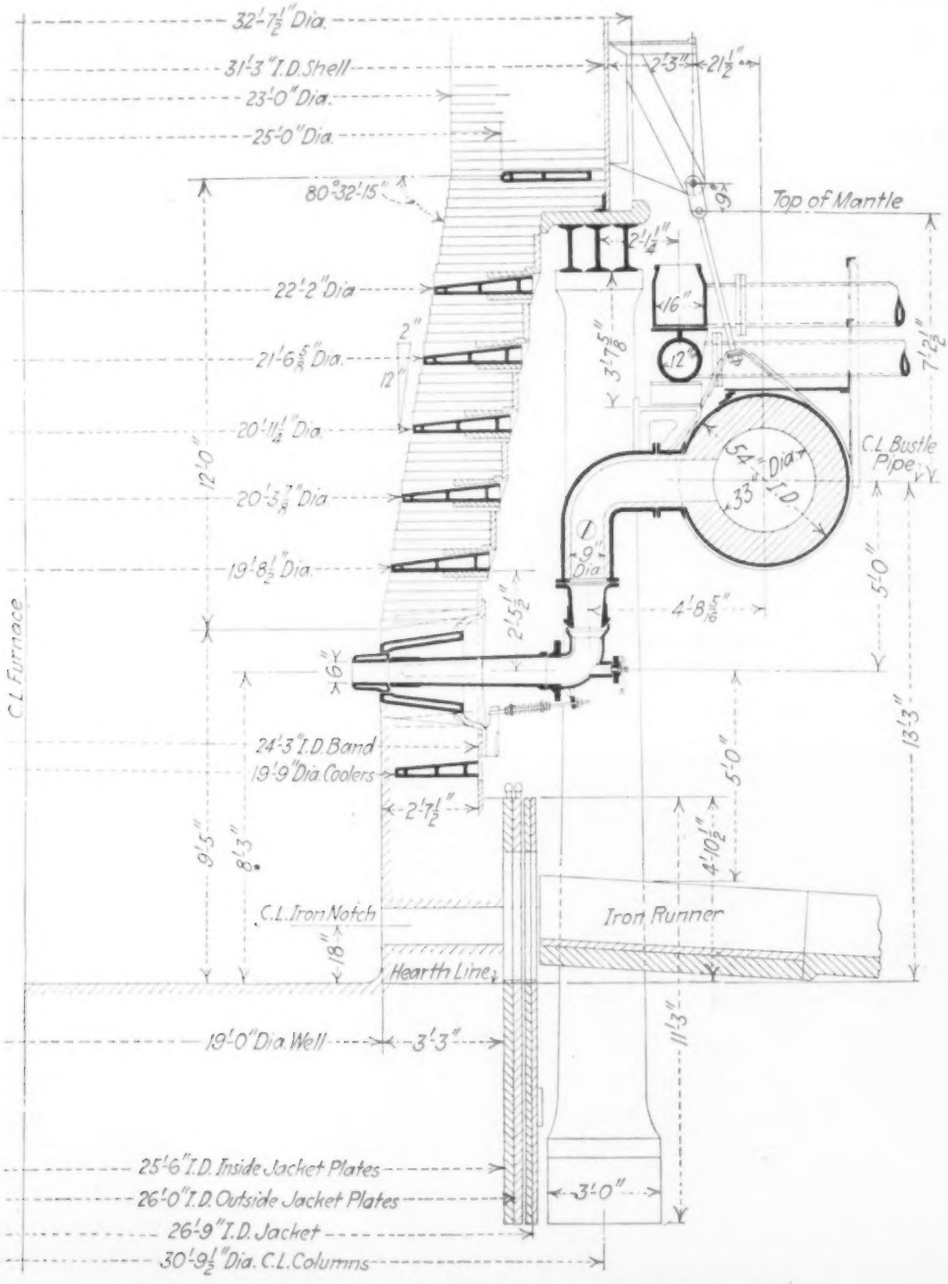
As originally constructed in 1916 the Midvale No. 3 furnace at Coatesville had a 17-ft., 6-in. hearth, 22-ft. bosh, 16-ft. stock line and 12-ft., 6-in. bell. It was 95 ft. 7 in. high. The measurements of the rebuilt furnace are 19-ft. hearth, 23-ft. bosh, 17-ft. stock line, 13-ft. bell and it is 93 ft. 7 in. high.

Although intended in the original plans as a 500-ton furnace, it did not give this output and the reconstruction was planned to give the additional capacity. The best monthly performance of the furnace was 14,845 tons and the best one-day record was 580 tons.

The furnace was originally designed by the engineering department of the Midvale company, in charge of R. H. Stevens, chief engineer, and was built by the William B. Pollock Co. The redesigning was also done by the company's engineering department.

All of the new dimensions of the furnace are larger than those of the old design except the height, which has been reduced by 2 ft. This change was made to raise the tapping hole so as to give more slope to the troughs.

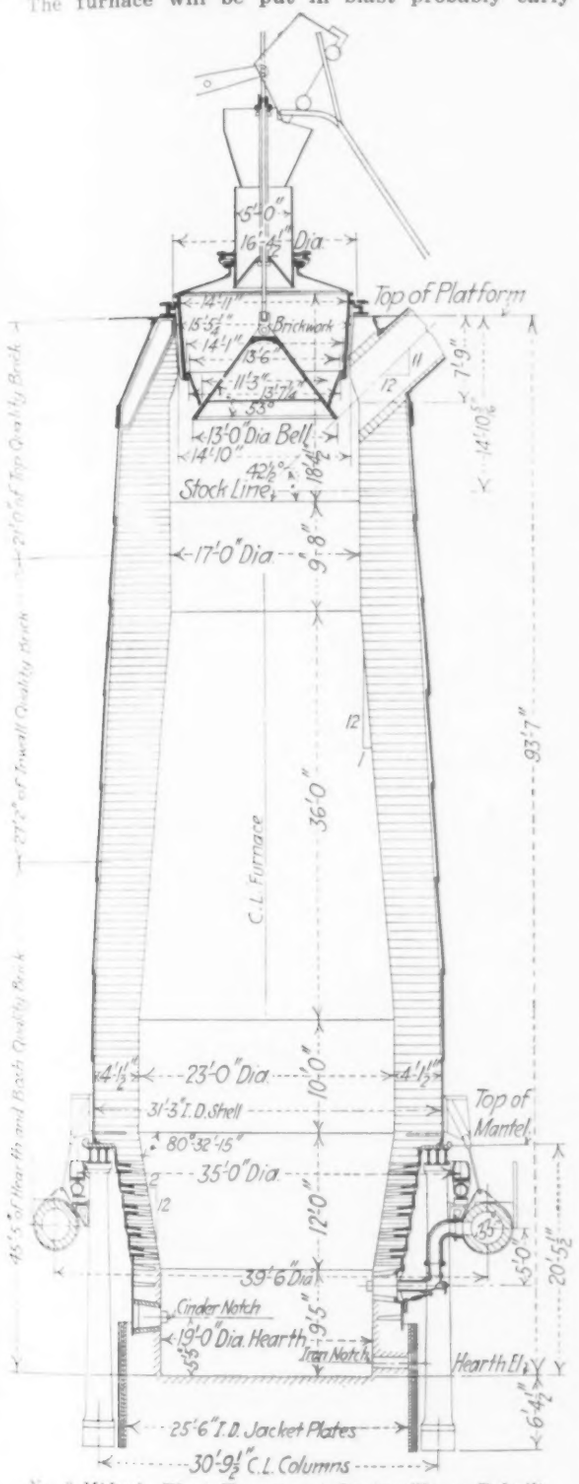
Another change is the replacing of the cast iron hearth jacket with one of steel plate construction. The



Details of Midvale's No. 3 Coatesville Furnace at Hearth and Bosh

cooling plates have been placed inside of this jacket. The furnace has also been equipped with a McKee revolving top. Other features of the stack remain as originally designed.

The furnace will be put in blast probably early



No. 3 Midvale Blast Furnace at Coatesville as Rebuilt

in April and is expected to maintain a regular production of not less than 550 to 600 tons a day.

Safe Practices Pamphlet No. 54 entitled "Handling Material" has just been published by the National Safety Council, 168 North Michigan Avenue, Chicago. The pamphlet is divided into the following main divisions: Power Trucks, Hand Trucks, Piling Material, Handling by Hand and Safe Habits of Work, each of which is again subdivided into paragraphs dealing with the different types of equipment used and the different methods employed in handling various types of material. The pamphlet is freely illustrated with photographs and diagrams.

CUTTING DOWN ACCIDENTS

Competition Between Departments at the Norton Co.'s Works

The Norton Co., Worcester, Mass., manufacturer of abrasive wheels and materials and grinding machines, is conducting a competition between its 45 departments, the goal of which is a minimum of lost time accidents. The contest has been in progress for over two years. Rivalry has been keen, particularly between the foremen, and shows no sign of diminishing. Each month a printed bulletin of results is circulated, and in each department is kept posted that department's record of the year to date.

The management believes that a material reduction in number of accidents has come from this system. There have been accidents, as there always will be in industry, but repetition of injuries received from any one avoidable cause is infrequent.

Each month the departments are ranked from No. 1 to No. 45 according to their safety efficiency for the year to date. Safety efficiency is 100 per cent, the perfect score, minus the accident percentage for the month, the latter being calculated by dividing the number of accidents for the month by the average number of employees. Standing to date is found by taking the average of the monthly safety efficiency scores, where lost time accidents have occurred. In departments where there has been no accident the rank is determined by the number of employees, assuming that the department having the largest number of employees has the greatest exposure to accident.

In 1922 there were 26 departments with no accident. Rank 1 was given to the department employing the greatest number of men, rank 26 to the department having the least number. In the whole year there were but 57 lost time accidents in the entire plant. A lost time accident is one which causes idleness lasting into the second day, which is the common definition. Various attempts were made to find some method of reducing natural handicaps as between departments by making corrections based on degree of hazard, but without success.

Every month each foreman of a department is handed a printed report containing the accident record of the whole works, with its more than 2200 employees. The record posted in every department, which is kept up by the safety engineers, has in column the months of the year, and against each spaces for the number of accidents, the department rate and the plant rate of accidents. In the "number of accidents" column is pasted each month a gold star if it has been a perfect month, or a black disc where there has been an accident. The ambition of each foreman is a card containing a vertical row of 12 gold stars.

Determination of Tin in Iron and Steel

The experimental work on the utilization of tin plate scrap conducted by the Department of the Interior and the University of Washington at the Northwest Experiment Station of the Bureau of Mines, Seattle, Wash., necessitated the selection of a simple method for the determination of tin in the iron produced. Some of the standard methods for the determination of tin which were tried are:

Dissolving in acids and precipitating the tin as sulphide, igniting and weighing as SnO_2.

Dissolving in acids, reducing with nickel, cooling in an atmosphere of carbon dioxide, and titrating with standard iodine solution.

Dissolving in acids, precipitating the tin as sulphide, dissolving this sulphide in HNO_3 and H_2SO_4, heating until fumes of SO_3 are evolved, reducing with nickel or sheet lead, cooling in an atmosphere of carbon dioxide, and titrating with a standard iodine solution.

A brief description of these methods is given in Serial 2459, by Edward P. Barrett, assistant metallurgist, and John D. Sullivan, junior chemist, which may be obtained from the Department of the Interior, Bureau of Mines, Washington, D. C.

NEW ENGLAND CONDITIONS

Present Status of Manufacturing in Varied Metal Lines in Central Massachusetts

WORCESTER, MASS., April 9.—New England produces a vast amount of special machinery and its builders are very busy indeed, among them Sleeper & Hartley, Inc., of this city, which specializes on spring and other wire forming machinery. A factor which is felt in the machine-tool trade is the constantly increasing demand for all sorts of products such as typewriters and kindred equipment, musical instruments, wireless telephones, and the hundred and one other things which enter more and more into everyday life of people, in their business and in their homes. The variety of such products apart from the enormous class of automobile accessories, is very great, and in almost every case their manufacturers are busy. They have begun to buy additional equipment, which consists chiefly of machine tools and kindred lines. Yet another influence on future machine tool business is the prosperity of firms building machinery for special purposes, such as woodworking machinery, paper box, confectioners', envelope machinery and dozens of other types.

One of the greatest industries of Worcester and vicinity is that of textile machinery. No other section of the country anywhere equals it, with the Draper Corporation at Hopedale, greatest of all builders of cotton looms; the Whitin Machine Works at Whitinsville, which makes a wide variety of textile equipment, and the Crompton & Knowles Loom Works of Worcester, which is the great builder of fancy looms. In addition the city has a dozen smaller concerns in the textile machinery industry. In all cases they are busy, and the exceedingly great activity of the textile industry itself promises greater demand for its machinery. Therefore it is to be expected the textile machinery people will be considerable buyers of machine tools in the months to come. The Crompton & Knowles Loom Works is to add a large forgeshop and heat treating department, to keep up with the increasing demand.

Activity in Wire and Wire Products

The wire business at Worcester, with all of its ramifications, is operating at top speed. There has been much improvement in the receipt of raw materials; the winter storms and embargoes brought somewhat serious results at times, causing real shortages of materials. The labor situation does not improve, however. Skilled wiredrawers and husky men to train as wiredrawers are scarce, and there is also a shortage of the common labor required in this industry.

The results, however, of better methods and organization which grew out of wartime measures to increase production are felt to an important degree, it is stated, so that per man production is higher than ever before, even in the face of a personnel which, to say the least, is no better than it used to be.

The Worcester Works of the American Steel & Wire Co., now employing well upward of 5000 men, are working as near capacity as the supply of labor will permit. Every department is filled with orders. In fact, new business is being accepted reluctantly, excepting from regular customers, many orders being refused. By this means deliveries have been kept within reasonable limits.

The Wickwire-Spencer Steel Corporation's works at Worcester, Clinton, Spencer and Palmer are similarly busy, employing about 4000 men. The company had been handicapped by the non-arrival of raw materials, but this has now been corrected to a large extent. The corporation's earnings have increased satisfactorily, according to a recently published report of financial condition.

Inability to get a sufficient supply of wire is the chief reason for the decision of G. F. Wright Steel & Wire Co. to build a wire mill of its own at the Jamesville plant. The company specializes on poultry netting and hardware cloth and clothes lines, and in spite of the fact that the business was established only two years ago has had almost a plethora of orders. The wire mill will have a capacity of 10,000 tons per annum, and will be ready to draw wire in the autumn. Much of the machinery will be built from the designs of the company's own engineers, as was practically all of the weaving machinery now operating.

The wire goods manufacturers are very busy, and they, too, complain of the difficulty in keeping themselves supplied with wire.

Pressed and Stamped Metal Manufacturing

The pressed and stamped metal companies are getting into a better position, because the plants are now filling up with business and competition is not so keen. The result is better prices. Up to recently volume of business has been satisfactory enough, but profits have been small, the manufacturers assert. But this transition is not completed.

The Worcester Pressed Steel Co., largest of the concerns in Worcester, is running full in its cold rolled strip mill, operating with two shifts. Some trouble is experienced in getting the hot rolled strip, but the lifting of the embargo has helped things to some extent. This company's experience is that its own prices to the trade have not advanced in the same ratio with its raw materials, the latter having gone from $2 to about $3.30, or 60 per cent, while the cold rolled strip has advanced only 40 per cent, to $5. Demand is heavy, the company's officials state, but in the pressed metal departments competition has been keeping prices down. The company is employing 320 men and has begun to suffer from employees' shopping around in similar plants, seeking higher wages, in the belief that growing scarcity of labor is due to bull their market. Fully 10 per cent of the workers are out each morning, presumedly looking for new jobs.

Activity in Other Lines

The screw business is thriving mightily. The largest of the concerns in this line of manufacture hereabouts is the Reed & Prince Mfg. Co., now employing upward of 1500 men and working at capacity, including night shifts in the manufacturing departments. The distribution of the new business is a very wide one, the company reports, and includes the usual amount of European orders as well as many for other foreign countries. The company has under construction additional buildings which will be completed and occupied in June, when 100,000 sq. ft. of floor space will become available, nearly half of which will be devoted to manufacturing departments.

The Liberty Screw Co., which manufactures strictly machine screw products, has a vast amount of business on hand, orders totaling at this time more than 20,000,000 pieces. Machines are operating on orders which will take them into 1924 to complete.

The leather belting business has improved on a big scale, and the Graton & Knight Mfg. Co. is exceedingly prosperous. The Worcester works, now employing 1400 men, are running at 80 per cent capacity, which is reckoned as normal but the other plants of the company are busier than that, being close to capacity at St. Louis, Glen Cove, N. Y., Detroit, Cleveland, Buffalo and Montreal. Very little of this business is for export.

A great revival is in progress in the establishing of power plants and additions to existing stations, according to the experience of firms which specialize in this class of equipment. Work which has been held up for several years is now being released and the projects put through to completion. This applies not only to the big central stations of the public utilities but to power plants in the manufacturing industries.

The Sanford Riley Stoker Co. of Worcester has just booked an order for four automatic stokers for the Essex Station of the Public Service Electric Co., Newark, N. J., which is in addition to machines now being installed in the company's Burlington and Essex stations. Four of these stokers are now being installed in the Lansing, Mich., municipal power plant, and four additional machines have recently been ordered. The Nippon Power Co. has placed an order with the same company for four stokers of 1600 hp.

capacity each for a new station in Tokyo. A shipment of five carloads has just been made of stokers furnished for the municipal council of Sydney, New South Wales, Australia.

The demand for railroad cars has placed the Osgood Bradley Car Co. on a full capacity basis, with 1500 men on the payroll and orders in hand to keep the works running for months to come. Recent orders are from the Boston & Albany and New York Central lines, and the Boston Elevated Railway.

The small tool business is at a high peak of demand and production. The Coes Wrench Co. is typical in its experience, its plants operating at full capacity, both in the wrench and machine knife divisions.

INDIANA PLANTS BUSY

Metal Working Plants at Anderson and Muncie Working at Full Capacity

Practically every metal-working plant at Anderson, Ind., and vicinity is operating under an increased schedule, with foundries and machine shops running at maximum. The iron and steel industry as a whole is giving employment to approximately 6750 persons in that section at the present time out of a total of 9000 operatives in all branches of industry. As compared with this same time a year ago, the Ames Shovel & Tool Works shows an advance of 30 per cent in output; Nicholson File Co., 25 per cent; Continental File Co., 17 per cent; Anderson Knife & Bar Co., 50 per cent; Anderson Foundry and Machine Co., 100 per cent; Lavelle Foundry Co., 25 per cent; Vulcanite Roofing Co., Beaver Products Division, 100 per cent; R. W. G. Foundry Co., 35 per cent; Howe Fire Apparatus Co., 50 per cent; and the Midwest Engine Co., Hill Pump Division, 50 per cent. These plants are now all close to normal production. The American Steel & Wire Co. shows an advance of about 25 per cent as compared with this same time a year ago, and is now giving employment to about 700 men at its local rod, fence and nail works. The Remy division of the General Motors Co. has doubled its production over this period of a year ago, and is now running full for the production of automobile parts, with a total working force of close to 2900 persons.

At Muncie, Ind., the Warner Gear Co. is operating at full capacity with day and night turns. About 1000 persons are employed on the two shifts, and additions will be made as soon as men are available. The company is said to have orders on hand to insure the present schedule for some time. The Kitselman Brothers Co., manufacturer of iron fences, etc., and the Indiana Steel & Wire Co., both of Muncie, are running full, with a total working force approximating 1000 persons. The Muncie Malleable Foundry Co., specializing in automobile castings, is at capacity, with a working force of 450 to 475 men. Additional skilled labor would be employed if available. Incoming business will keep the plant on the present schedule for several months to come. The Muncie Products Co., division of the General Motors Corporation has its four local plants in service, with a combined working quota of close to 2900 persons; the Durant Motor Co. of Indiana is operating at maximum capacity at its Muncie works, with a working force totaling about 1000 men; the Muncie Gear Co. is running full, with normal operating force, as is also the Hoosier Clutch Co.

Steel Mills at Buffalo

The Wickwire-Spencer Steel Co., Buffalo, is advancing production to the highest point in the history of the company, and the local mills are giving employment to a maximum force for the manufacture of wire, wire rope, automobile springs, steel fabric, fencing and other wire and steel products. The Seneca Iron & Steel Co., in this same section, has 13 sheet mills in service under a heavy production schedule. The Donner Steel Co. is establishing new high records for output at its local bar mills, and is giving employment to a large working quota on a full time basis. The Bethlehem Steel Co. is running at about 85 per cent at its Lackawanna plant, with a force of 8400 men; seven blast furnaces are on the active list, and two additional stacks will soon be added. The company is booked to capacity on its present schedule for the first half of the year for carbon steel bars and billets and structural shapes.

Survey of 30 representative firms in the city of Buffalo made by the States Employment Department shows an increase in employment for March of 3 per cent. The industrial group, including iron and steel mills, foundries and machine shops, showed the greatest increase. Brass industries of the city are also adding men rapidly.

Union Agitation in Pennsylvania

UNIONTOWN, PA., April 9.—Coal and coke operators in the Connellsville region and throughout the State are showing a keen interest in proposed legislation before the State Assembly at Harrisburg. This is of especial significance to this region because of the great amount of "strike legislation" bearing the apparent trade-mark of unionism that has been dumped into the legislative hopper.

Efforts to unionize the Connellsville coke region failed miserably after the union had spent a large sum of money in the region to bring out the workers here and then deserted them to their own resources. There is still considerable union agitation in the region, efforts being made now to organize an insurgent section of the union. Affiliation with the U. M. W. A. on the part of these representatives is both denied and affirmed. At a recent meeting held in Brownsville, with several hundred delegates present, it was voted to apply for a charter for District No. 4, but the meeting adjourned in more or less disorder over the election of officers for the proposed new district. Reports are current here of the organization of a Progressive Miners' Union, with at least two locals organized in the county.

A close watch is being kept in the region as to possible disturbances during April on the part of those attempting to maintain an organization in the region. There are no indications of a general strike or serious disorders, however.

Wage Advances at Youngstown

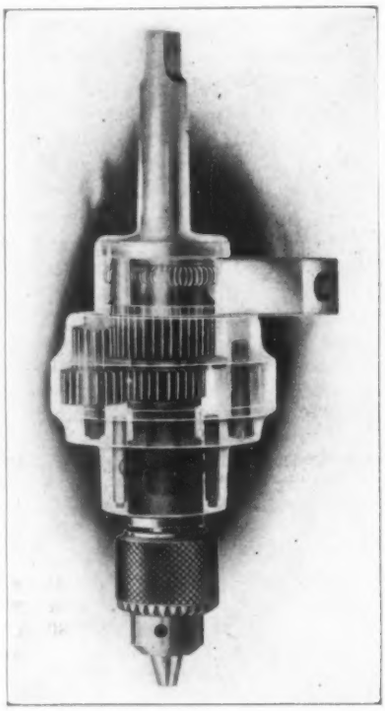
YOUNGSTOWN, April 10.—Several district industrial concerns have advanced the common labor rate from 36c. to 40c. per hour including the A. M. Byers Co., Pittsburgh, at its Girard plant and the United Engineering & Foundry Co. at its Youngstown properties. Smaller plants are also paying 40c. for common labor.

E. J. Janitsky, metallurgist Illinois Steel Co., South Chicago, Ill., addressed the South Bend, Ind., chapter of the American Society for Steel Treating at a banquet meeting held in the executives' dining room at plant No. 2 of the Studebaker Corporation on March 14. His subject was "Melting Processes in the Manufacture of Steel," and his remarks were illustrated by three reels of moving pictures, depicting methods employed by the Illinois Steel Co. in its plants. Leo Jordan of the Studebaker Corporation presented a paper on "Temperature Measurement by Pyrometer and Maintenance of Instruments."

The Interstate Commerce Commission held a hearing at Indianapolis April 2 and 3 on the petition of the wire manufacturers of Indiana to be put on the same freight basis as Pittsburgh manufacturers to points in Kentucky and Tennessee. Objections to the petition were filed by Louisville and Cincinnati jobbers, as well as railroad companies operating in the territory.

Tapping Devices with Shock Absorber

The Geometric Tool Co., New Haven, Conn., has added to its line the Jarvis sensitive tapping device illustrated, for light high-speed drill press work. A feature of the device is a shock absorber, which acts on the reverse gears and is intended to minimize the breakage of taps at the instant of reversal.



Two styles are offered, both being equipped with shock absorbers. Style OA has a positive ball drive and is for high-speed drill press work tapped through the piece. Style OAN is equipped with a cone friction drive and is for work in blind holes or tough tapping, especially very light, small work. The shock absorber feature is of advantage, especially when the spindle is running, for example, at 2000 r.p.m. and the chuck at 4000 r.p.m. in reverse. The shock of impact is very great ordinarily, and by almost eliminating it, the average life of the tap is increased.

The body of the tapper is of aluminum and weighs less than 2 lb. The chuck spindle is of tool steel hardened and ground. The tapping range is from 0 to 3/16 in. They can be equipped with Nos. 1 or 2 Morse taper shanks.

Extensive Building of By-Product Coke Ovens

By-product coke oven construction is now on the largest scale of any time since the war period and that now under way will provide the country with additional capacity for the carbonizing of between 5,000,000 and 6,000,000 tons of coal a year. Nearly all of the orders placed in recent months have been for Koppers installations. Republic Iron & Steel Co., Youngstown, Ohio, ordered 61 such ovens, the Battle Creek Gas Co., Battle Creek, Mich., 11; the Columbia Steel Corporation, Salt Lake City, 33; the Bethlehem Steel Corporation, Lackawanna, N. Y., 114; the Consumers Power Co., Milwaukee, Mich., 19, and the Trumbull-Cliffs Furnace Co., Warren, Ohio, 47. In addition, the extension to the Clairton, Pa., plant, Carnegie Steel Co. calls for 366 Koppers ovens and there are 37 in the battery being built by Weirton Steel Co., Weirton, W. Va. This makes a grand total of 688 Koppers ovens being built, while Semet-Solvay Co. a short time ago took a contract for the new battery of ovens for a gas company at Hamilton, Ontario.

Proposed Extensions of Central Steel Co.

The Central Steel Co., Massillon, Ohio, is planning the erection of a blast furnace and has sent letters to its stockholders asking them to subscribe to an issue of common stock for financing this proposed extension. R. E. Bebb, chairman of the board of the company, in his annual report issued a few days ago, stated "we still need to round out our plant an 8-in. mill at a cost of $1,000,000 to $1,500,000. Another essential we should look forward to is a blast furnace to protect us on raw material, which will need some outside financing, but we believe can be accomplished without affecting the value or earning power of the common stockholdings of the present owners."

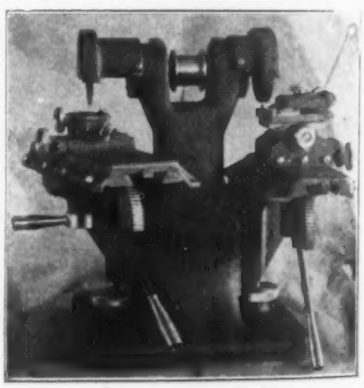
New Exhibits in Pittsburgh Base Case

CHICAGO, April 9.—The United States Steel Corporation has offered in evidence a revision of exhibits which had been filed in February in the hearings on the Pittsburgh basing point case before the Federal Trade Commission. The first group of exhibits covers 748 invoices of the Illinois Steel Co. taken from the years 1900 to 1921 inclusive and the second group all contracts, except those covering export and barbuilders' business and about 300 special instruments covering tonnage for future delivery, for the years 1908, 1910, 1911, 1912, 1914 and 1915. The chief difference between these exhibits and those submitted previously is that price comparisons are made with four prior issues of THE IRON AGE instead of with a single issue, and that approximately 30 special products have been included with the plates, shapes and bars originally covered. A large part of the testimony during the week has consisted of an explanation of the nature of these products, how they are rolled and the extras they carry over the base prices for plates, shapes and bars. No published extra cards are available for these commodities. A revision of the third series of exhibits prepared by the Steel Corporation, covering 1600 invoices of the Illinois Steel Co. taken from the years 1908, 1909, 1910, 1911, 1912, 1914 and 1915, was submitted in evidence Monday, April 9.

Grinder for H & G Die Head Chasers

A bench machine for regrinding the chasers of its H & G self-opening die heads is being marketed by the Eastern Machine Screw Corporation, New Haven, Conn. This equipment is intended to minimize time lost from production due to regrinding, and to provide the means for correct grinding with the least amount of stock removed.

The machine occupies a space of about 20 x 20 in. and stands 18 in. high. There are two grinding wheels mounted on a ball bearing spindle, which is adequately protected from emery. The knees, located beneath each wheel as shown, are adjustable vertically and the tables on the knees are provided with longitudinal movement. The left-hand wheel is for grinding the throats or chamfers. Each chaser is located in the fixture by a hardened pin that enters the cam slot on the chaser, locating it just as it is located in the die head. By means of an adjustable anvil, long or short chamfers may be had as required, and the table may be swiveled to provide the proper curvature, the vise being also provided with offsetting adjustment. This combination is intended to provide the means of obtaining exactly the right clearance at the throat.



Machine for Grinding Chasers of H & G Die Heads. The left-hand wheel is for grinding throats or chamfers and the right-hand wheel for the rake angle or angle of cutting face. Four chasers are held at once and fixture tilted to the proper angle

The right-hand wheel and table is used for grinding the rake angle or angle of cutting face. Four chasers are held at once by means of a single cam-actuated clamp. The fixture used may be adjusted in a direction parallel to the wheel spindle or it may be tilted for grinding any degree of cutting angle. The regular equipment includes countershaft and two wheels. The shipping weight complete is about 240 lb.

Clement A. Hardy, foundry engineer, Chicago, delivered an address before a noonday meeting of the Malleable Chain Manufacturers Institute at Hotel LaSalle, Chicago, March 23.

Brass Goods Manufacturers' Meeting

The following notes of the spring meeting of the National Association of Brass Manufacturers, held at the Sherman House, Chicago, have been obtained from William M. Webster, commissioner of the association, City Hall Square Building, Chicago.

The new credit exchange bureau established by the association was reported to be giving satisfaction. The suggestion was made that the commissioner might ask new jobbing concerns or even others for a statement of their affairs, such as they furnish to the mercantile agencies, the idea being that the supplying of the information would be entirely voluntary.

An appeal was made to jobbers, contractors and plumbers to use their influence in educating the house owner, user, and the public generally in respect to the best method of handling nickel plated faucets.

A stereopticon lecture and moving picture address on the matter of simplified practice, standardization and waste elimination was given during the afternoon session by W. A. Durgin, of the Department of Commerce, Washington.

The association authorized Messrs. Wasweyler and Webster to appoint a catalog committee to issue a new official catalog in 1925 in keeping with the understanding among the various jobbing organizations.

The convention authorized an appropriation of $500 on recommendation of Mr. Mueller, of the water works division of the standardization committee, for corrosion tests at the Bureau of Standards, Washington. The committee on Government specifications, of which Mr. Mueller is chairman, expects soon to report finally to the Government.

A committee was appointed to secure a booth at the convention of the National Association of Master Plumbers, to be held the week of June 25 at Atlantic City, N. J.

The following members were accepted to membership: Acme Brass Works, Detroit; Hoelscher Brothers, Chicago; Capitol Brass Works, Detroit; McRae & Roberts Co., Detroit.

The commissioner was instructed to order uniform models and gages from the Greenfield Tap & Die Corporation, the idea being to get gages that will give the proper thread and taper of faucets for lavatory purposes that would be of a standard uniform size.

The convention adjourned to meet in Atlantic City at about the time of the convention of the National Association of Master Plumbers.

Safety Conference in Chicago

For the midyear safety conference to be held in Chicago, April 17, under joint auspices of the National Safety Council's Engineering Section, the Chicago Safety Council, and the Western Society of Engineers, the following program has been announced:

Morning Session, Handling Material; Chairman, George T. Fonda, Fonda, Tolsted, Inc., Washington:

Causes of Accidents in Handling Material, by C. H. Smith, Continental Casualty Company, Chicago.

Eliminating Material-handling Accidents by Use of Conveyors, by H. L. McKinnon, C. O. Bartlett & Snow Co., Cleveland.

Eliminating Material-handling Accidents by Use of Portable Elevators (Motion Pictures), by William B. Pavey, Economy Engineering Co., Chicago.

Eliminating Material-handling Accidents by Use of Trucks. Discussion led by E. F. Blank, Buick Motor Co., Flint, Mich.

Round-table: "Our Greatest Problem in Handling Material."

Afternoon Session, Western Society of Engineers, Auditorium; Dust and Fume Hazards; Chairman, C. B. Auel, Westinghouse Electric & Mfg. Co., East Pittsburgh:

Preventing Dust Fires and Explosions, by D. J. Price, engineer, Bureau of Chemistry, Department of Agriculture, Washington.

Health Protection Against Dust and Fumes, by Dr. L. R. Thompson, surgeon-in-charge of industrial hygiene and sanitation, U. S. Public Health Service, Washington.

Practical Methods of Dust and Fume Removal, by H. H. Valiquet, dust collecting engineer, B. F. Sturtevant Co., Chicago.

General Discussion, led by William Ruthven, assistant technical superintendent, Western Electric Co., Chicago.

Dinner Meeting, Morrison Hotel; Toastmaster, Homer E. Niesz, Commonwealth Edison Co., Chicago:

Safety—An Essential of Modern Industry.

Safety Engineering Applied to the Traffic Problem, by R. F. Kelker, consulting engineer and traffic expert, city of Chicago.

Traffic Law Enforcement, by Judge Charles L. Bartlett, Recorder's Court, Detroit.

Six Electric Railroad Standards Approved

The American Engineering Standards Committee has approved as American standard six of 13 specifications covering the design of steel rails and their accessories which had been submitted by the American Electric Railway Association. The specifications approved cover the design of the following:

9-in. and 7-in. girder grooved rail; 9-in. and 7-in. girder guard rail; joint plates for 7-in. and 9-in. girder grooved and girder guard rails.

Some of these specifications were adopted as standard by the A. E. R. A. as far back as 1907. One of the principal manufacturers of steel rails reports that approximately 79 per cent of his total tonnage of girder rails shipped to electric railroads in 1922 was A. E. R. A. standard. This same company reports that in the past seven years 62 per cent of its total tonnage of electric railroad girder rails was A. E. R. A. standard.

Specifications for galvanizing or sherardizing on iron and steel and specifications for tubular steel poles have been referred to special committees.

Specifications for 7-in. 80-lb. and 7-in. 91-lb. girder rails and specifications for materials for use in the manufacture of special track work have been referred to a sectional committee. It is expected that the development of these projects will result in reducing the present diversity of shapes of rails and such accessories as bolts, nuts, rivets, frogs, crossovers, and the steel, manganese steel, iron, and malleable iron castings for both steam and electric railroads.

COMING MEETINGS

April

National Metal Trades Association. April 16 to 19. Twenty-fifth annual convention, Hotel Astor, New York. L. W. Fischer, Peoples Gas Building, Chicago, secretary.

Society of Industrial Engineers. April 18 to 20. Spring convention, Cincinnati. George C. Dent, 327 LaSalle Street, Chicago, business manager.

American Gear Manufacturers' Association. April 19 to 21. Annual meeting, Hotel Cleveland, Cleveland. T. W. Owen, 2443 Prospect Avenue, Cleveland, secretary.

National Foreign Trade Council. April 25 to 27. Annual convention, New Orleans. O. K. Davis, 1 Hanover Square, New York, secretary.

American Foundrymen's Association. April 28 to May 3. Annual convention and exhibition, Public Hall, Cleveland. C. E. Hoyt, 140 South Dearborn Street, Chicago, secretary.

May

American Electrochemical Society. May 3 to 5. Semi-annual meeting, Hotel Commodore, New York. Colin G. Fink, Columbia University, New York, secretary.

American Association of Engineers. May 7 to 9. Annual convention, Norfolk, Va. C. E. Drayer, 63 E. Adams Street, Chicago, secretary.

National Pipe and Supply Association. May 15 to 16. Convention at Cincinnati. George D. McIlvane, 909 Oliver Building, Pittsburgh, secretary.

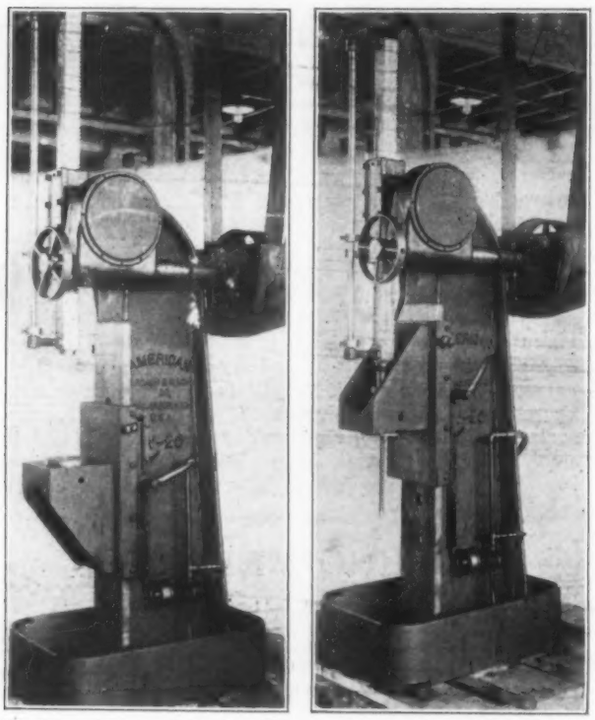
National Supply & Machinery Dealers' Association, Southern Supply & Machinery Dealers' Association and American Supply & Machinery Dealers' Association. May 17 to 19. Triple convention, Hotel Sinton, Cincinnati. F. D. Mitchell, 1819 Broadway, New York.

American Society of Mechanical Engineers. May 28 to 31. Spring meeting at Montreal, Quebec. Calvin W. Rice, 29 West Thirty-ninth Street, New York, secretary.

New Vertical Broaching Press

The American Broach & Machine Co., Ann Arbor, Mich., has added to its line the vertical broaching press illustrated, designated as the V-20. The machine will receive broaches of the push type up to 20 in. and pull broaches up to 28 in. long.

The machine is not limited to broaching alone. The drive is by means of a pair of friction clutches which are easily accessible, and flexibility of control is a feature of the machine. The drive is through a hardened steel worm and bronze worm gear similar to that of the company's rack-operated horizontal broaching machines, and the final drive is through a hardened pinion and steel ram. The machine delivers a pressure of 8 to 10 tons. The ram is 2½ x 2½ in. with the working end tapped out 2 in., 8 pitch, to receive standard pull bushings, such as used on horizontal machines. Automatic stops are provided.



Machine Arranged for Push Broaching or Assembly Work Is at the Left. The same machine for pull broaching is at the right, the knee being reversed, direction of belts changed and links on operating handle reversed

The left-hand illustration shows the machine as arranged for push broaching or assembly work. An oil pump is provided as shown, and the base made deep to serve as an oil reservoir. The machine is fitted with a slide and knee, the latter being arranged to pivot in the center of the slide so that the knee may be reversed, as shown in the right hand illustration, to permit using the machine for pull broaching. To operate as a pull broach it is only necessary to change the direction of the driving belts and reverse the links on the operating handle, which causes the power or cutting stroke to be on slow speed and the return on fast speed.

The knee and slide are bored and bushed. In this bushing there is a large removable steel pin, which is used for locking the knee and slide to the face of the machine, a number of holes being provided for the different positions of the table. The slide is raised and lowered by means of a crank and pinion arrangement. The table has a hole 5 in. in diameter which is central with the tapped hole in the end of the ram.

The machine is said to be especially satisfactory in pull broaching as it permits the broach to hang in a perpendicular plane, centering itself in the work. The handwheel shown is permitted to coast while the machine is in operation. In using the hand wheel for setting or for hand operation, slight pressure is applied endwise on the wheel, which engages a positive clutch.

Continued Activity in the Youngstown District

YOUNGSTOWN, April 10.—Both major and minor plant operations continue at a peak rate in the Youngstown district, and schedules are being maintained close to capacity. The supply of box cars for this territory has improved and railroads are keeping pace with the intense industrial activity. An index of this is in the fact that in March shipments of the Trumbull Steel Co. at Warren equaled production of finished steel, aggregating 38,000 tons.

The Republic Iron & Steel Co. has one idle jobbing mill at its Niles plant, one inactive bar mill at the Brown-Bonnell Works, while its Atlantic furnace at New Castle, Pa., is still cold. The Youngstown Sheet & Tube Co. has one idle pipe mill. Except for its Liberty plant at Leavittsburg, producing tin plate, the Trumbull Steel Co. is operating at capacity.

The Falcon Tin Plate Co., Niles, has resumed operations at its Canton plant, where it has nine mills devoted to production of tin plate. Output at present consists largely of tin mill sizes of black sheets and some tin plate.

Of the 46 blast furnaces in the Youngstown district, 39 are pouring, while three others are under orders for relighting. Owing to labor shortage, a number of puddle mills at the Girard plant of the A. M. Byers Co., Pittsburgh, are inactive. The 10-in. strip mill at Sharon, Pa., of the Sharon Steel Hoop Co., is down for repairs.

Record Building Construction

Contracts awarded in March for residence building are reported by F. W. Dodge Corporation to have been the greatest for any month in the history of the United States. The figures for 36 eastern States, covering about seven-eighths of the nation's total construction volume, amounted to $175,705,000, giving a total for the three months of the year at $412,285,000, or 44 per cent ahead of the first three months of 1922.

Construction contracts for all classes of work in the 36 states in March amounted to $371,447,000, and for the three months to $895,325,000, or 23 per cent greater than in the first quarter of 1922. The present quarter shows a larger total than in the first quarter of any previous year.

Continued Productive Activity

Preliminary figures from the Department of Commerce show that February maintained the high production of January and in some cases surpassed it markedly. When account is taken of the difference in number of working days, in the two months, new high records were made in copper production and in wool consumption. Unfilled orders on hand for such commodities as steel sheets, steel barrels and maple flooring were the largest recorded in recent years.

After considerable experimental work on various manganese castings and rails the Kent-Owens Machine Co. of Toledo, Ohio, recently succeeded in milling manganese steel running 14 per cent in manganese. The ball fit and switch point of a 90 lb. manganese rail was milled with a 2 in. end mill made of Diamond alloy steel manufactured by The Kent-Owens Machine Co. A bevel cut 5 3/4 in. long was made on the rail 1/16 in. deep at one end and 1/4 in. deep at the other with 6 passes of approximately 30 in. It is stated that this was done without grinding the tool and that at the completion of the operation the tool was still in serviceable condition. Later the operation was repeated at the shop of P. H. Biggs of Cleveland.

The weekly luncheon of the Rotary Club of Milwaukee on April 3 was devoted to an inspection of the new works of the Milwaukee Air Power Pump Co. at 8-10-12 Keefe Avenue. After a buffet luncheon in the plant dining room, the Rotarians were conducted on a tour of the plant, following all processes in the manufacture of pneumatic pressure pumping systems.

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ESTABLISHED 1855

THE IRON AGE

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Guarding Against Reaction

The cautions thrown out from time to time on the possibilities of danger in the rapid expansion in the steel business that has come since the beginning of the year are well. They indicate the safe auspices under which the movement is proceeding and will help to postpone the day of reaction. In 1919 and early 1920 there were business men who considered it well-nigh an attack on the general welfare to suggest that prices had gone too high or that the situation was loaded with danger. Today the cautions are given without fear of being consigned to the limbo of the pessimists. Secretary Hoover, with every desire, from the official standpoint, to make a strong proclamation of prosperity—and he does make it—inferentially indicates that the building movement too rapidly might head up into a peak from which there would be a precipitous descent into a valley. Hence he asks the President to order a slowing down of Government construction work and meantime the starting of no new public work, so that private construction may not have to compete with the Government for labor, materials and transportation.

Producers of steel have suggested that prices have gone up far enough and have guarded against duplication of orders by consumers, so that there may be no storing up of cancellation troubles. It is recognized that with the iron and steel making machinery of the country now working close to the limit of its productive power, as determined by the supply of available labor, any unusual efforts by buyers aimed at accumulating raw material stocks would only put up prices unduly and increase the demand for credit without a corresponding increase in the volume of actual business.

The most marked expansion in demand in the past three months has been in industries that are large consumers of rolled steel products. The iron foundries of the country as a whole represent a 70 per cent operation, and the machine tool industry continues on a 50 per cent basis. Thus the pig iron market, which is a gage of these two industries, reflects a more conservative view of the future than has been indicated by the prices for finished steel. In respect to the latter, however, an important consideration is that car and locomotive works now have orders that will occupy them well toward the end of the year and have covered for the requisite steel. In tank work and steel construction, also, the orders already given at prices $15 to $20 a ton below those of today will suffice for the needs of important tank and fabricating plants for some months to come. This means that important users of steel need not engage in active competition for steel as in the well-remembered scarcity market of 1919 and 1920.

That the extent of the present demand upon the steel mills was not foreseen by leaders in the industry six months ago, or even four months ago, has increased rather than diminished efforts to keep buying and selling policies on a healthy basis.

Ferromanganese and High Steel Output

With a total steel output, including castings, of not far from 45,000,000 tons for 1923, if the present rate is maintained, the question is frequently asked whether ferromanganese supplies are to be adequate. The lack of ore in England and the fact that British sellers are offering very little alloy for the rest of the year adds to the doubt in the minds of some steel makers.

An examination of the present situation and the probabilities is reassuring. According to the statistics of THE IRON AGE, the average production of ferromanganese for the first quarter of the year was 20,490 tons per month. The maintenance of this rate means 245,880 tons for 1923. Importations last year were 94,592 tons or 7882 tons per month, the heaviest since 1913. Reliable estimates point to receipts of at least as much for this year, unless strikes or lack of ore in Great Britain interfere.

A steel production of 45,000,000 tons this year means theoretically a consumption of 340,000 tons of ferromanganese at 17 pounds of the latter to the ton of steel. With domestic output at a rate of 245,000 tons and with importations of 95,000 tons not improbable, there should be no general scar-

city of the alloy during 1923. In fact, additional capacity blown in during March should augment our present rate.

The present situation recalls the unexpected achievements of 1916-18. Despite war conditions on the seas, American blast furnaces and electric furnaces rose to the occasion and furnished enough ferromanganese for an output of steel practically the same as today's. As is the case now, foreign ores were necessary. Thus history is repeating itself, but without any particular help from the high tariff on manganese ore.

Labor in Steel Making

The average number of employees of the United States Steel Corporation in 1921 was 191,700, while the output in steel products for sale to customers outside the organization was 7,860,334 tons, representing 47.5 per cent of rated capacity. In 1922 the employees averaged 214,931 and the output was 11,785,331 tons, representing 71.3 per cent of capacity.

From 1921 to 1922 the number of employees increased by 12 per cent while the output increased by 50 per cent. The output per employee was 41 tons in 1921 and 55 tons in 1922. Before the war the common view was that the burden of operating a mill at less than about 60 per cent of capacity was unbearable, but during the war and since the war many things have had to be done that were formerly considered out of the question.

With the low operating rates of the last two years, outputs have really been very fair in proportion to employment. Labor is not nearly so inefficient as it was in 1919 and 1920. It is an outstanding fact, however, that in time of depression labor fares much better than tonnage. There is more employment of men than of machinery. Unemployment is a bad thing at best, but employment does not fluctuate so much as tonnage.

Of the average of 214,931 employees of the Steel Corporation in 1922, 21,523 are credited to "transportation properties." Some of these properties rendered more or less public service, while there was some transportation service performed for Steel Corporation units that is not common practice with independents. The total number of employees of the Steel Corporation, therefore, can hardly be considered typical of the steel industry in general, and the output per employee may be taken at more than shown above, while with a reasonably full operation, 80 to 90 per cent, the tonnage per employee would be higher still.

It seems to be a good all-around estimate that the steel industry, when operating well, will produce from 65 to 70 gross tons of finished product, in the form of regular mill products, per employee in a year, on the basis of the industry mining its ore and coking coal, making its coke, and depending on outsiders for coal, for ore transportation and for the supplies that are ordinarily bought.

Considering the highly finished character of much of the product, in nails, tin plate, tubing, etc., the steel industry does not employ a great deal of labor in proportion to the importance of its product. It would seem, from a general view, to be decidedly efficient. The industry is now producing in the neighborhood of 3,000,000 gross tons of finished rolled steel a month, somewhat less if the product be weighed in the final form as to wire, pipe, etc., but not much less. The employment involved, on the basis just assumed, is perhaps nearer 500,000 than 600,000, or perhaps 1.2 or 1.3 per cent of the total number of persons gainfully employed in the country. The percentage must not be compared, of course, with 100 per cent, for there are teachers, public servants, storekeepers and many other classes of persons gainfully occupied who would first have to be deducted in making a comparison.

It is impossible to make any comparison between the labor involved in producing steel mill products and the labor involved in consuming those products or putting them into employment, for most of the work done in this country involves some use of steel. It is obvious, however, that when there is unemployment it is in no large measure due to steel mills having reduced the number of their employees, and that when there is scarcity of workmen the consumption of steel must be affected as well as the production of steel

Higher Silicon Pig Irons

Recently a reader of THE IRON AGE wrote to this office saying that he had found it almost impossible to buy No. 1 foundry pig iron, even at $1 per ton above the price for No. 2, and that whereas formerly it was comparatively easy to purchase iron on a specification of 2.50 to 3 per cent silicon, he was now unable to get even a 2.25 to 2.75 per cent silicon. He added that under these conditions the foundryman was put in a difficult position, in view of the demand upon him to produce castings that can be machined readily.

On the same day that this letter was received, the statement came from a Middle Western manufacturer of builders' hardware that for some time he had been compelled to anneal the castings delivered to him by the foundry with which he had his contract. The explanation given by the foundry for the quality of its castings was that it could not obtain pig iron of the requisite silicon content.

Inquiry has been made among sellers of foundry pig iron, and the consensus of expression is that No. 1 foundry iron is in the usual supply relative to other grades, though the fact is that in some cases greater differentials than heretofore are being asked for the higher silicon irons. The situation is not uniform in all districts, but the condition mentioned by our correspondent appears to be the exception. In general our market reports have indicated that higher silicon irons can be obtained by the payment of differentials representing the greater consumption of high-priced fuel involved in the production of irons running up in silicon.

One explanation suggested for the production of hard castings in the case of builders' hardware referred to above is that foundrymen have not been so sure of late, in purchasing machinery cast scrap, that they were getting the quality to which they have been accustomed. It is known

that semi-steel castings entered into considerable machinery built during the war period, and apparently some of this equipment has been broken up and sold for machinery scrap.

We invite further comment from either buyers or sellers of pig iron, and shall be glad to have the experience of foundrymen in the use of the machinery cast scrap they have bought in the market in recent months.

Decline of Railroad Mileage

In spite of continued growth of population in the United States, and still greater growth of productive activity calling for railroad transportation of goods, there was a net decrease of 2206 miles in the length of railroad line in the years 1916 to 1921 inclusive. Each of these six years showed a decrease and 1922, also, when the figures are available, will probably show a decrease.

The *Railway Age* contrasts this shrinkage of 2206 miles with the increase of the previous six years (1910 to 1915 inclusive) when the total gain in mileage was 20,294. It may be noted, however, that each of these six years had a smaller gain in mileage than the year immediately preceding, 1910 having shown 5908 miles increase and 1915 only 831 miles. Abandonment of a 247-mile railroad in a rich agricultural territory was the occasion for the analysis above. Against the violent protest of the people in the territory served must be set the inability of the railroad to make a profit under the restrictions imposed by governmental super-regulation. Other railroads struggling with the same problem are cited, some of which appear more than likely to succumb to the pressure.

"There are many other railroads in the country," says our contemporary, "some much larger than any of those mentioned, the results of whose operations show that it is only a matter of time until they will have to be torn up, unless a different policy of Government regulation is adopted. . . . This is the only country in the world except Russia where men who are trying to destroy the transportation system of the country are called 'progressives.'"

Standardization throughout the world is now proceeding on a scale probably never before approached. National standardization bodies at the first of the year were at work in 15 foreign countries, with the prospect of similar organizations being established in each of the South American republics. Complementing such efforts, centered largely in this country in the American Engineering Standards Committee, is the simplification movement, encouraged if not originated by the Department of Commerce. It aims at reducing wastes in methods, processes, styles, sizes and the like, and perhaps has contributed something already to the sustained productivity of the country against at least the usual number of obstacles. So largely technical is the work that the extent and importance of standardization and simplification have not been recognized in proportion to the benefits conferred upon industry.

OBJECT TO EXHIBITS

Federal Trade Commission Attorneys Disapprove Method of Showing Prices

CHICAGO, April 10.—Counsel for the Federal Trade Commission today filed an extended objection to the series of price exhibits submitted in evidence by the Steel Corporation in the Pittsburgh basing point case. The exhibits are a revision of price comparisons originally offered in February. Following objections raised to the original exhibits, the hearing was adjourned Feb. 19 and the recess of five weeks was taken to permit the corporation to prepare new comparisons. Attorneys for the commission now state that the new exhibits embody all the objectionable features of the old exhibits and additional objectionable features which can serve no purpose other than to further confuse the commission.

The objection challenges the competency of A. V. Winter, witness for the corporation, who has testified as to how the price comparisons in the exhibits were prepared. Objection is also raised to the inclusion in the comparison of the Illinois Steel Co. prices on plates, shapes and bars with IRON AGE prices at Pittsburgh some 40 special commodities, among them plow beam billets, harrow teeth tractor tires, spring steel, piston rods, hub bands, scraper blades, mold boards, frog fillers, etc. It is asserted that these articles are entirely different from bars, plates and shapes and in most instances are made from a different kind of steel. It is also stated that the prices on these commodities were never published and were never fixed, but could be changed at will by the sales department because competitors could not detect a cut in price if it were made. Objection is raised to the method used in comparing the prices in contracts which specify a certain tonnage, but do not segregate it between the different products named in the contract. Thus if the contract prices on plates, shapes and bars are identical with those published in THE IRON AGE while that on plow beams is above or below, the entire tonnage is shown as diverging from THE IRON AGE Pittsburgh prices. It is also objected that a large number of contracts show on their face that the tonnage was sold for delivery over long periods of time exceeding in numerous cases more than a year, and that they are not comparable with IRON AGE prices which cover early delivery. It is asserted that the comparisons ignore arbitrary concessions made at times to agricultural implement workers, concrete bar dealers, warehouses and wholesalers, as well as a 2c. arbitrary concession made during a certain period to steel bar consumers at Milwaukee. Objection is raised to comparisons with Pittsburgh base prices on tonnage sold in the South, where the Birmingham arbitrary has been adhered to.

Objection is raised because the exhibits do not include contracts issued by the Illinois Steel Co. for the years 1909 and 1913. The Federal Trade Commission attorney states that there was an open market in 1909 precipitated by Judge Gary, chairman of the Steel Corporation, and the sales made during that period, when competition ruled the market instead of the Pittsburgh plus system, would disclose very nicely just how competition flourishes when Pittsburgh plus is eliminated. (Filing of the above exhibits is referred to on page 1044.)

The Combustion Engineering Corporation, Ltd., and the Uehling Instrument Co. have recently entered into an agreement whereby Uehling interests in Canada and Newfoundland will be handled exclusively by the Combustion Engineering Corporation, Ltd., with principal offices located in Toronto, Montreal, Winnipeg and Vancouver.

New orders for ship construction placed in the first three months of this year show an excess in volume over the tonnage launched, according to Lloyd's Register. Work under way on April 1 totaled 2,531,000 tons for all the world against 2,390,000 tons on Jan. 1.

FABRICATED STEEL BUSINESS

Drop in Awards but Round Total in Fresh Inquiries

Of about 15,000 tons in fabricated steel awards in the past week, one-half represents buying for private account and over half of the remainder railroad work. Pending lists were increased by 25,000 tons in the week.

Oppenheim & Collins Co. store, Philadelphia, 1100 tons, to McClintic-Marshall Co.

South Brooklyn telephone exchange addition, 150 tons, to Hay Foundry & Iron Works.

Public School No. 121, New York, 600 tons, to Easton Structural Steel Co.

Building at Chester, Pa., 200 tons, to McClintic-Marshall Co.

Chesapeake & Ohio Railroad bridges, 3500 tons, to McClintic-Marshall Co.

Loft building on Thirty-seventh Street, New York, 800 tons, to Paterson Bridge Co.

Public School No. 17, New York, 800 tons, to Hedden Iron Construction Co.

Building at Caspar, Wyo., 200 tons, let by J. G. White Engineering Corporation, New York, to Hammond Iron Works.

Pacific Southwest Trust & Savings Bank, Fresno, Cal., 1145 tons, to Dyer Bros.

Brunswick Kroeschell Co. plant, Chicago, 750 tons, to Vierling Steel Works.

Hotel Topeka, Topeka, Kan., 494 tons, sublet by Capitol Iron Works to Kansas City Structural Steel Co.

Lafayette Club, Lake Minnetonka, Minn., 224 tons, to Minneapolis Steel & Machinery Co.

Montreal Mining Co., shaft sets for No. 6 shaft, Montreal mine, Hurley, Wis., 163 tons, to American Bridge Co.

Jasper County, Ind., highway bridges, 176 tons, to St. Louis Structural Steel Co., Vincennes Bridge Co., Continental Bridge Co., and Rochester Bridge Co.

Testing building for Leschen & Sons Rope Co., St. Louis, 160 tons to Mississippi Valley Structural Steel Co.

International Great Northern Railroad Co., two 100-ft. and one 50-ft. deck plate girders for bridge over the Guadalupe River near New Braunfels, Tex., 175 tons, to Wisconsin Bridge Co.

American Gas & Electric Co., Philo, Ohio, runway for power house, 430 tons, to American Bridge Co.

Bedell Store, building, Detroit, 580 tons, to Whitehead & Kales.

Dodge Brothers, Detroit, loading dock, 250 tons, to Russell Wheel & Foundry Co.

Pittsburgh Plate Glass Co., building, Zanesville, Ohio, 800 tons, to Pittsburgh Bridge & Iron Co.

Gas holder, Ford, Ont., 500 tons, to Stacey Mfg. Co.

Purifiers at Winston-Salem, N. C., 100 tons, to Stacey Mfg. Co.

Oil City, Pa., high school, 250 tons, to Jones & Laughlin Steel Corporation.

Warehouse for Allen Kirkpatrick Co., Pittsburgh, 150 tons, to Jones and Laughlin Steel Corporation.

Transmission towers for Denver Gas & Electric Co., Denver, Colo., 700 tons, to American Bridge Co.

Buffalo, Rochester & Pittsburgh Railroad, bridge work, 200 tons, to American Bridge Co.

Structural Projects Pending

Inquiries for fabricated steel work include the following:

Public School No. 190, Brooklyn, and Public School No. 122, Manhattan, New York, each about 800 tons.

Apartment building at Lexington Avenue and Thirty-fifth Street, New York, 300 tons.

Brooklyn Borough Gas Co., office building, Brooklyn, 250 tons.

Garage on West Sixty-ninth Street, New York, 200 tons.

Office building on West Forty-seventh Street, New York, 1000 tons.

Apartment building at 71 Park Avenue, New York, 400 tons.

Apartment building at 151 West West Seventy-fourth Street, 475 tons.

Apartment building at 19 West Sixty-fourth Street, New York, 300 tons.

Turkish bath building, Bronx, New York, 200 tons.

Apartment building on East Seventy-third Street, New York, 300 tons.

Atlantic Coast Line, bridges, 200 tons.

Catholic school, Brooklyn, 400 tons.

Johns-Manville Co., office building on Forty-first Street, New York, 1500 tons.

Baldwin Locomotive Works, Philadelphia, additions to shops, 2000 tons.

Navy Department, oil tanks for erection at Portsmouth, N. H., 1500 tons.

Transit Commission, inspection sheds to be erected on Jerome Avenue, New York, 700 tons.

New York Net & Twine Co., pipe line at East Haddam, Conn., 1500 tons.

Biltmore Hotel, Atlanta, Ga., 800 tons.

Potomac Electric Power Co., power plant near Washington; 1000 tons, Stone & Webster, general contractors.

Western Electric Co., Hawthorne, Ill., buildings 15-B and 14-B, 900 tons.

Jewish Hospital, St. Louis, 1600 tons, bids too high, design changed to reinforced concrete.

Titanium Pigment Co., plant, Granite City, Ill., 500 tons.

Illinois Central, bridges, 421 tons.

Northern Pacific, bridges, 304 tons.

Yuster Building, Columbus, Ohio, 800 tons.

American Rolling Mill Co., Middletown, Ohio, two buildings, 250 tons.

Highway bridge, Fonda, N. Y., 350 tons, bids in.

Ford Motor Co., Detroit, buildings at River Rouge plant, 5000 tons, bids taken.

Michigan Land & Lumber Co., Iron Mountain, Mich., wood distillation plant, 2000 tons.

RAILROAD EQUIPMENT BUYING

More Car Business But Repair Orders a Feature

From Jan. 1, 1922, to March 15, 1923, the railroads purchased 223,616 new freight cars. Of these, 117,280 have been delivered and put in service. The railroads in that time also purchased 4219 new locomotives. Of that number 2106 have already been placed in service. Practically all the equipment still on order is to be delivered by fall, at which time freight traffic is always the heaviest.

Shipments of railroad locomotives from the principal manufacturing plants increased to 282 in March, and were the highest since December, 1920, according to figures published by the Department of Commerce from compilations of the Bureau of the Census. Unfilled orders continued to increase and made a new high record at 2316 locomotives, an increase of 96 during the month. Unfilled foreign orders increased for the first time since last October, amounting to 102 out of the total of 2316.

Some of the items of the week were:

The United States Fuel Co., Chicago, is in the market for 500 70-ton hopper cars.

The Southern Pacific has ordered 350 steel ballast cars from the Mount Vernon Car Mfg. Co.

The Baltimore & Ohio Railroad will rebuild 1000 coke cars in its own shops.

The Illinois Central Railroad will have 1000 gondolas and 600 box cars repaired by the Ryan Car Co.; 1400 box cars will be repaired by the American Car & Foundry Co., and further orders for repairs to 550 cars will be let shortly.

The Missouri Pacific Railroad has contracted with the American Locomotive Co. for the repair of 143 locomotives.

The Wabash Railroad is inquiring for 50 locomotives.

The Florida East Coast Railroad is in the market for 20 locomotives.

The Detroit, Toledo & Ironton has placed 25 gondola cars with the Standard Steel Car Co.

The General American Tank Car Corporation, is building 500 tank cars for its own use.

The Hocking Valley has placed 1000 hopper cars with the American Car & Foundry Co.

The Denver & Rio Grande Western will build 100 narrow gage stock cars in its own shops.

The Monon is inquiring for 500 gondola cars.

The Southern Pacific has placed 360 ballast cars with the Mount Vernon Car Mfg. Co.

The Santa Fe is in the market for 25 baggage and 50 refrigerator cars.

The Atlantic Coast Line is inquiring for 15 coaches.

The Sun Oil Co. has ordered 150 tank cars from the Standard Tank Car Co.

The Emmons Coal Mining Co., Philadelphia, has placed 400 hopper cars with the American Car & Foundry Co.

The McMahon Oil Co. has purchased 15 tank cars from the Standard Steel Car Co.

The Homer Wilcox Co. has ordered six tank cars from the Standard Steel Car Co.

The Missouri Pacific is inquiring for 20 Mikado type, five Mountain type, and 10 switching type locomotives.

The Belt Railway of Chicago has placed five switching engines with the Baldwin Locomotive Works.

The Minnesota Transfer has ordered two 8-wheel switching engines from the Baldwin Locomotive Works.

MARCH STEEL OUTPUT

Exceeds Any Month's Record at a Rate of About 45,560,000 Tons a Year

All records for steel ingot production by the 30 companies reporting to the American Iron and Steel Institute were broken in March with an output of 3,402,007 gross tons. The nearest approach to this was in October, 1918, when the same 30 companies reported a production of 3,352,196 tons of ingots. In March, 1920, the largest post-war month heretofore, the corresponding output was 3,299,049 tons. The March increase over February for the 30 companies was 482,990 tons, or about 16.5 per cent. At 27 working days for March the daily rate for the companies reporting was 126,000 tons.

Assuming that the 30 companies made 86 per cent of the total ingot steel, then the country's output for the 27 working days of March was about 3,955,800 tons, or 146,500 tons per day. This is at the rate of 45,560,000 tons a year or about 87.6 per cent of capacity. The greatest year in ingots was 1917, with 43,619,200 tons. The February production of the country, again reckoning the output of the 30 companies at 86 per cent of the total, was about 3,394,000 tons or 141,425 tons per day.

The statistics of the American Iron and Steel Institute since January, 1921, follow in gross tons:

Monthly Production of Steel Ingots by 30 Companies Which Produced About 87.50 Per Cent of the Steel Ingot Production in 1921

Months	Open-Hearth	Bessemer	All Other	Total
January, 1921...	1,591,281	608,276	3,629	2,203,186
February	1,295,863	450,818	2,796	1,749,477
March	1,175,591	392,983	2,404	1,570,978
April	1,000,053	211,755	2,150	1,213,958
May	1,047,810	216,497	1,543	1,265,850
June	808,286	193,644	1,476	1,003,406
July	689,489	113,312	575	803,376
August	915,334	221,116	1,621	1,138,071
September	908,381	265,152	1,207	1,174,740
October	1,269,945	345,837	1,028	1,616,810
November	1,294,371	363,912	1,718	1,660,001
December	1,129,174	296,380	1,539	1,427,093
Total, whole yr.	13,125,578	3,679,682	21,686	16,826,946
January, 1922...	1,260,809	331,851	822	1,593,482
February	1,395,835	348,571	616	1,745,022
March	1,918,570	451,386	795	2,370,751
April	1,997,465	445,939	1,109	2,444,513
May	2,214,774	494,893	1,474	2,711,141
June	2,143,708	487,851	2,918	2,634,477
July	2,020,572	464,047	2,485	2,487,104
August	1,807,310	404,379	2,893	2,214,582
September	1,911,147	460,127	2,505	2,373,779
October	2,352,207	518,010	2,198	2,872,415
November	2,360,903	525,945	2,449	2,889,297
December	2,241,104	536,214	2,572	2,779,890
Total, whole yr.	23,624,404	5,469,213	22,836	29,116,453
January, 1923...	2,571,491	677,486	2,717	3,251,694
February	2,290,418	625,838	2,761	2,919,017
March	2,656,134	742,564	3,309	3,402,007

Hadfield and J. E. Johnson, Jr., Prizes Awarded Mining Engineers

The directors of the American Institute of Mining and Metallurgical Engineers announced last week the awarding of two important metallurgical prizes. In both cases the prizes are awarded for the first time.

To C. L. Kinney, Jr., and G. R. McDermott, open-hearth superintendent and assistant chief engineer, respectively, South Chicago Works, Illinois Steel Co., South Chicago, Ill., the Hadfield prize of $1,000 was awarded because of their splendid contribution entitled, "Design of a Proposed 100-Ton Open-Hearth Furnace," which was presented at the fall meeting in October, 1922, of the American Iron and Steel Institute. Neither is a member of the organization awarding the prize. The prize was founded by Sir Robert Hadfield some time ago for the best research on fuel economy and was offered both in England and the United States, $1,000 being the amount in each case. The English prize was awarded about a year and a half ago on the occasion of a symposium on fuel economy, as was made public at the time. The American paper referred to was considered as an outstanding contribution to the fuel economy of the open-hearth.

The other prize is known as the J. E. Johnson, Jr., prize, and was awarded to Alexander L. Field, in recognition of his excellent work in originating a method for determining the viscosity of blast furnace slags. Mr. Field is a member of the staff of the research laboratory, Long Island City, of the Union Carbide & Carbon Co., 30 East Forty-second Street, New York. This prize is the income of a principal of about $3,500. It was established by the late Mr. Johnson to encourage young men who deserve recognition for special work in iron blast furnace research, and it is an annual event when circumstances warrant its bestowal.

Both of these decisions were made by the directors of the mining engineers on the recommendation of the iron and steel committee and they were announced at a dinner held by this committee Friday evening, April 6. Messrs. Kinney and McDermott, recipients of the Hadfield prize, were present and made appropriate speeches. They said that they were continuing their work and that some important developments might be made public sometime in the near future.

A meeting on foundry practice is to be held at Newark, N. J., April 24 by a section of the American Society of Mechanical Engineers.

Tennessee Company Breaks Production Records

BIRMINGHAM, ALA., April 10.—The Tennessee Coal Iron & R. R. Co., which broke 11 production records in January, broke 17 all-time high records in March. The new No. 1 stack at Ensley, which was rebuilt last year to a rated capacity of 550 tons a day, very nearly made a record of 600 tons a day. On individual days it has made 625 and 637 tons. The company expects to begin operations at the new 10 and 12-in. bar mill at Fairfield about May 1 and will then require 10,000 tons more of its own steel per month. It is very close to being an exclusive finished steel producer. The new high records made in March and previous ones are as follows:

	March 1923 Tons	Best Previous Record Tons	
Edgewater coal mine	102,697	98,663	Aug. 1922
Docena coal mine	65,941	60,485	Jan. 1923
Bayview coal mine	55,604	52,056	Aug. 1922
Hamilton slope coal mine	23,487	21,585	Nov. 1922
Vanns (limestone)	16,213	13,909	Jan. 1923
Fairfield Coke Works	161,356	160,058	Jan. 1923
Total all blast furnaces	127,864	121,721	Oct. 1917
Total Ensley blast furnaces	87,256	85,007	Jan. 1923
Ensley blast furnace No. 1	18,310	16,393	Jan. 1923
Ensley open-hearth—ingots	107,395	102,613	Jan. 1923
Ensley blooming mill	83,546	79,657	Jan. 1923
Ensley rail mill	49,325	48,550	Jan. 1923
Fair field bar and structural mill.	16,660	14,668	Oct. 1922
Fairfield tie plate	6,142	5,955	Feb. 1923
Total Bessemer rolling mill	13,785	13,095	Mar. 1920
Bessemer plate mill	5,958	5,801	Mar. 1920
Bessemer guide mill	3,283	3,189	Jan. 1923

The Ohio-Kentucky Fluorspar & Lead Corporation, Youngstown, Ohio, has awarded a contract to the Union Iron Works Co., Joplin, Mo., for a mill and concentrating plant for its Kentucky property. The unit will cost upwards of $50,000, installed, and will have a daily capacity of from 100 to 125 tons. It is expected to be in operation early in July. Capacity output of the plant for the rest of the year has already been sold.

In the New York and New Jersey district men engaged in ship repair work will receive an advance in wages on May 1, which in the case of machinists and boilermakers will be from 64c. an hour to 72c. an hour. The new rate is the one which prevailed prior to the reduction of February, 1922.

Steel Companies Announce Wage Advance

Action of the United States Steel Corporation Quickly Followed by Most Independents—Salaried Men Not Included—Record of Other Changes

THE United States Steel Corporation on Monday afternoon announced an advance of 11 per cent in wages in the manufacturing plants of its subsidiaries. The statement was in the following language:

"It has been recommended to the presidents of the manufacturing subsidiary companies of the United States Steel Corporation that the wage rates of day labor at their plants be increased about 11 per cent, and that other wage rates in the manufacturing plants be equitably adjusted, to become effective April 16, 1923."

It will be noted that the statement does not include any reference to salaries. The custom of the Steel Corporation has not been uniform in this respect, as some previous announcements have referred to salary adjustments and others, like the latest, have referred to wages of workers in manufacturing plants only.

Judge Gary is now at sea, returning from his Mediterranean trip, and is not expected to arrive in New York until Friday, but it is understood that the announcement was not made until after he had been communicated with.

Most of the independent companies quickly followed the Steel Corporation with similar announcements.

Record of Wage Changes

Other announcements by the Steel Corporation have been as follows:

Jan. 6, 1916, 10 per cent increase.
May 1, 1916, 10 per cent increase.
Dec. 15, 1916, 10 per cent increase.
May 1, 1917, 10 per cent increase.
Oct. 1, 1917, 10 per cent increase.
April 15, 1918, 15 per cent increase.
Aug. 1, 1918, 10 per cent increase.
Oct. 1, 1918, 8-hr. basic day adopted.
Feb. 1, 1920, 10 per cent increase.
May 16, 1921, 20 per cent increase.
June 6, 1921, basic 8-hr. day abolished.
Aug. 29, 1921, decrease to 30c. per hr.
Sept. 1, 1922, 20 per cent increase.

The following table shows the wages of common labor after each advance or decrease in wages by the United States Steel Corporation:

Date	Wages 10-Hr.	Date	Wages 10-Hr.
1915	$2.00	Oct. 1, 1918	*$4.62
Feb. 1, 1916	2.20	Feb. 1, 1920	5.08
May 1, 1916	2.50	May 16, 1921	†4.05
Dec. 15, 1916	2.75	July 16, 1921	†3.70
May 1, 1917	3.00	Aug. 29, 1921	3.00
Oct. 1, 1917	3.30	Sept. 1, 1922	3.60
April 15, 1918	3.80	April 16, 1923	4.00
Aug. 1, 1918	4.20		

*Eight-hour basic day established and time and one-half paid for overtime.
†Approximated.

Employees and Wages

The number of employees of the Steel Corporation from 1902 to 1922, inclusive, according to the annual report, has been as follows:

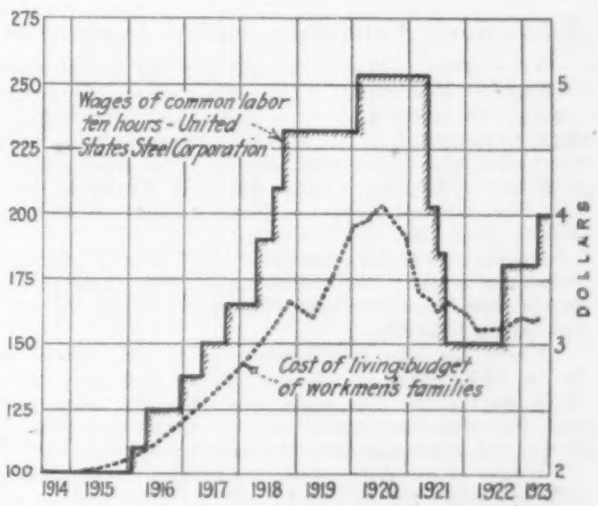
1902	168,127	1909	195,500	1916	252,668
1903	167,709	1910	218,435	1917	268,058
1904	147,343	1911	196,888	1918	268,710
1905	180,158	1912	221,025	1919	252,106
1906	202,457	1913	228,906	1920	267,345
1907	210,180	1914	179,353	1921	191,700
1908	165,211	1915	191,126	1922	214,931

The average salary or wage per employee per day of all employees, exclusive of general administrative and selling force, has been: 1912, $2.68; 1913, $2.85; 1914, $2.88; 1915, $2.92; 1916, $3.29; 1917, $4.10; 1918, $5.33; 1919, $6.12; 1920, $6.96; 1921, $5.61; 1922, $4.78.

The average compensation, including general administrative and selling force, has been: 1912, $2.75; 1913, $2.92; 1914, $2.97; 1915, $3.01; 1916, $3.36; 1917, $4.16; 1918, $6.12; 1919, $6.17; 1920, $7; 1921, $5.73; 1922, $4.91.

Pittsburgh Not Surprised

PITTSBURGH, April 9.—Announcement by the Steel Corporation of a wage increase of approximately 11 per cent, effective April 16, word of which was received here this afternoon, occasioned little surprise, since it



Comparison of Common Labor Wages of the United States Steel Corporation with Cost of Living Figures of the National Industrial Conference Board, Based on the Average Workman's Budget

was in line with general expectations. It will be followed by other steel and iron producing companies; indeed, some of the smaller producing units had previously announced an increase of about the same amount, advancing common labor from 36c. an hour to 40c., with equitable adjustments in the scales of other classes of labor. Among the local companies to make the advance, effective April 1, were the A. M. Byers Co., at both its local and Girard, Ohio, plants; the Union Drawn Steel Co., the Moltrop Steel Products Co., and the Standard Gage Steel Co., all of Beaver Falls, Pa., where the shortage of labor has been notably acute for some time past. Indeed, manufacturers in that district for some time have paid the equivalent of more than the prevailing rate, as they have been feeding and housing the men in an effort to prevent too frequent turnovers.

The Pittsburgh Steel Co. has announced its intention to follow the raise of the Steel Corporation, which, according to local advices, applies only to workmen in the manufacturing plants, this distinction being made in the latest announcement, presumably because it is not the intention of the corporation to this time include salaried employees in the increase. The Jones & Laugh-

lin Steel Corporation also will advance wages in line with the Steel Corporation's increase. Merchant pig iron producers also will go along with the increase.

It is, of course, too soon to state the effect of the increase in wages upon iron and steel prices, but the more common view is that present prices generally cover present costs, including the pending wage increase, with a fair margin of profit, and that there will be little, if any, attempt to write the higher labor costs into selling prices.

Announced at Chicago

CHICAGO, April 9.—The Illinois Steel Co. announced today that, effective April 16, wage rates for day labor at its steel mills will be advanced approximately 11 per cent, and its wage rates for other mill and shop occupations will be equitably adjusted.

Tennessee Company's Action

BIRMINGHAM, ALA., April 10.—The Tennessee company today officially announced that common labor rate will be increased to 31c. Other hourly as well as piece and tonnage rates will be equitably adjusted effective April 16. The advance applies to the manufacturing and transportation departments and Birmingham Southern Railroad.

Youngstown Companies Follow Corporation

YOUNGSTOWN, April 10.—Among the independent iron and steel interests in the Mahoning and Shenango Valleys which will follow the lead of the United States Steel Corporation on April 16, in advancing wage rates approximately 11 per cent, are the Youngstown Sheet & Tube Co., Republic Iron & Steel Co., Trumbull Steel Co., Sharon Steel Hoop Co., Newton Steel Co. and the Falcon Steel Co.

Owing to scarcity of common labor in view of broad industrial activity, the prevailing day labor rate of 36c per hr. has frequently been disregarded of late by large employing interests.

Under the new rate, common labor will receive $4 for a 10-hr. day, or 40c per hr., as compared with $5.06 during the war peak, when the day labor rate was 46c. with time and a half for all time over 8 hr. About two years ago time and a half was eliminated.

Wages of all other employees besides common labor will be "equitably adjusted." Commenting on the increase, President James A. Campbell of the Youngstown Sheet & Tube Co., the largest independent employer in the district, states: "I am glad the Steel Corporation has made the announcement. Wage increases have been going on around us. We always follow the Steel Corporation and will do so this time."

In the greater Youngstown district it is estimated that approximately 50,000 workers will benefit, and that the monthly payroll passing through Youngstown banks will gain by about $500,000.

Steel makers have found it extremely difficult to hold common labor, in view of the fact that the outside labor rate is from 45c to 55c per hr. Importation of common labor from the South came to an end April 1, when the rate in the Birmingham district was marked up. In Ohio, railroad labor was advanced to 40c per hr. by most roads, effective April 1.

Bethlehem's Advance

President Grace of the Bethlehem Steel Corporation announced Tuesday that his company would make wage advances and that the details of the increase were being worked out through the employees' representation system at the different plants. It was understood that the advance will be virtually the same as that of the United States Steel Corporation.

A Review of Iron and Steel Literature for 1922, being a classified list of the more important books, serials and trade publications of the year, has been issued by the Pittsburgh Carnegie Library under the authorship of E. H. McClelland, technology librarian.

Triple Convention of Supply and Machinery Associations

The program of the triple convention of the American Supply and Machinery Manufacturers Association, the National Supply and Machinery Dealers Association and the Southern Supply and Machinery Dealers Association, which will be held May 17 to 19 at the Hotel Sinton, Cincinnati, has been practically completed. It is in part as follows:

"Present Status and Trend of the Mill Supply Business" will be discussed at the opening meeting by five members from each association. "Cash Discounts," "Standardization," and "Closer Cooperation Between Manufacturer and Dealer" will be discussed at joint sessions, all three associations participating. M. B. Skinner, M. B. Skinner Co., Chicago, will introduce the discussion on cash discounts and Paul Armstrong, Armstrong Brothers Tool Co., and J. H. Williams, J. H. Williams & Co., will be among those speaking on standardization. Farnham Yardley, Jenkins Brothers, New York, will speak on the subject of closer cooperation between manufacturer and dealer.

In addition, a joint session between the American Supply and Machinery Manufacturers Association and the Southern Supply and Machinery Dealers Association will be devoted to the following topics: "Should We Give Any Support to Those Manufacturers Who Do Not Distribute Through the Dealers?" "Should the Manufacturers Place Stock with Local Brokers for Distribution and Billing to Purchasers on Manufacturers' Stationery?" "Can a Jobber Profitably Handle Drop Shipments at 5 Per Cent, When the Cost of Doing Business for Such Is from 8 to 10 Per Cent?"

Iron and Steel Jobbers at Chicago

The 1923 convention of the American Iron, Steel and Heavy Hardware Association will be held at the Drake Hotel, Chicago, Tuesday, Wednesday, and Thursday, May 15 to 17. Secretary A. H. Chamberlain's announcement states that steel manufacturers and manufacturers' representatives in Chicago have held a meeting to discuss arrangements, being joined by the large Chicago warehouses, and indications are for one of the best attended conventions the association has held. A feature of the program is an intensive study of the costs of operation and distribution. The association's new system of cost analysis will be presented and the discussion will be led by A. L. Philbrick, treaurer of Congdon & Carpenter Co., Providence, R. I. The necessity will be urged of doing business at a better gross profit and reducing the volume of unprofitable lines. As at previous conventions there will be discussions of business conditions and propects and informing analyses of the financial and credit situation.

Shortage of Malleable Molders

Reports received by the American Malleable Castings Association indicate that malleable foundries throughout the country are now operating at an average of about 70 per cent of floor capacity. In nearly all plants the production is restricted by the scarcity of both molders and common labor. The shortage is particularly noticeable in Cleveland and in foundries located at points west of Cleveland. Wages of both molders and common labor show an upward tendency.

A meeting of the American Malleable Castings Association will be held in Cleveland May 2, during the convention of the American Foundrymen's Association. This meeting will be limited to one business session to be held during the forenoon, giving the members an opportunity to attend during the afternoon a malleable iron session of the American Foundrymen's Association.

Preliminary steps have been taken by Worcester, Mass., iron molders to demand an increase of 15c. per hr. in wages. The present rate is 75c. per hr.

EXPORT INQUIRY LIGHTER

Japanese Merchants Hesitate at Present Prices—Other Markets Inquire

NEW YORK, April 10.—The volume of inquiries from practically all foreign markets continues heavy, but exporters are encountering increasing difficulty in placing orders with mills. With the exception of the inquiries from Japan and China, transactions generally go no further than quotation of a price. China continues quite active, particularly for second-hand material and wire shorts, with some business being done in steel pipe and galvanized sheets. South America continues buying moderately of galvanized sheets, fence wire, etc., and various governmental and municipal projects are reported from time to time. A distinct improvement in business in South Africa is reported. Money is more easily obtained, commercial failures are less numerous and the building trade is well employed. Iron and steel prices there have been advanced.

Japanese buying is largely confined to official sources and large companies. In addition to a number of rail inquiries pending, the Nippon Oil Co. opened bids on April 9 on 16,500 boxes of tin plate. Award has not been reported. It is noteworthy that on a previous inquiry for the same tonnage, a few months ago three times the original specification was placed with three different export companies. Japanese merchants, evidently believing that the American market has about reached a price peak are refraining from buying except for immediate needs, so as a result, buying of sheets, wire, nails, etc. and similar stock items is at a low ebb. One Japanese export house, however, reports the sale recently of about 200 tons of ⅝ to 12-in. steel pipe.

Japanese Steel Works to Electrify

A recent report to the Bureau of Foreign and Domestic Commerce states that the Yawata Iron Works of the Japanese Government plans the general electrification of its plants. Definite plans now being prepared call for an outlay of 18,000,000 yen, to be expended over a period of three years in the installation of electric cranes, conveyors, trucks and motors for various pieces of machinery. There is an ample supply of power and several of the plate mills and foundries have already been equipped to make use of the electrical service. As the existing steam engines need to be replaced, electrical equipment will be purchased. Saving 60 per cent in fuel and 30 per cent in labor costs are some of the results anticipated from electrification.

Japanese Machinery and Other Imports

Reports of Japanese imports of machinery in February tend to show that Japan is becoming a heavy buyer of American machines. Figures of the Department of Commerce show that machinery and parts received by Japan from the United States in February totaled 5,100,000 yen, compared with 3,800,000 yen in January. Japan received only 2,900,000 yen of machinery and parts from Great Britain in February and 2,500,000 yen in January. Imports from other countries totaled 1,500,000 yen in February and 1,600,000 yen in January.

Of pig iron, ingots and slabs Japan imported 47,618 gross tons in January and February, of which more than half, 27,380 gross tons were received from India. In bar iron, rods, plates and sheets, the tonnage furnished by the United States ran behind Great Britain, American material totaling only 17,860 tons compared with 23,810 tons of British material. From other countries Japan received 27,980 gross tons of these products.

A company with $300,000 capital is being formed in India to erect a Portland cement plant near Madras, according to a report from the American consul. It is indicated that there is an opportunity for American companies to bid on the erection of the buildings, the machinery and other supplies. A power plant and equipment with electrical drive will be required. The plant will have a total capacity of about 18,000 tons a year.

The State of Rio Grande do Sul, Brazil, has appropriated 596,000 milreis for the construction of 14 bridges during the coming year and an additional 70,000 milreis has been set aside for bridge-repair work, according to a report of the American trade commissioner at Rio de Janeiro.

BUSINESS SLACK IN BELGIUM

Market Unsteady—Sellers Offer Concessions—Pig Iron and Semi-Finished Steel Scarce

BRUSSELS, BELGIUM, March 28.—The fluctuation of exchange rates is interfering with the course of business, and purchasers are observing a guarded attitude. Although prices are now firmer, the general opinion is that the market will continue unsteady until the Ruhr problem has been solved. Coke supplies are still insufficient and iron production is therefore restricted. Lorraine works continue absent from Belgian markets.

Pig Iron.—Pig iron and semi-finished products are scarce, and the position of finishing mills and foundries is still precarious. Chill-cast foundry pig-iron No. 3 P. L. is nominally 550 to 600 fr. per ton, furnace, and the small tonnages of Luxemburg pig iron occasionally offered are sold at the same price. Lorraine pig iron is quoted, nominally at 600 fr., with none obtainable.

Semi-Finished Steel.—Transactions in semi-finished steel are rare and the following are only nominal prices for basic material:

	Fr. per Metric Ton
Ingots	600
Blooms	650
Billets	700 to 750
*Sheet billets	750 to 800

*Open-hearth, 880 fr.

Iron Products.—There is little business in iron. Works are making concessions to obtain orders. Merchant iron is quoted at 700 to 750 fr. for No. 2 and 750 to 800 fr. for No. 3. Iron for forging and bolt making is at 700 fr. minimum.

Steel Products.—The situation is about the same as in the market on iron products. Purchasers are holding aloof and sellers are offering generous concessions. The following quotations are current for both domestic and export shipment:

	Fr. per Metric Ton
Bars	750
Small beams	750 to 800
Heavy beams	775
Rails	750
Rods	950 to 975
Hoop and strip	1,000

Sheets.—The sheet market is most unstable and weak. The following prices are quoted for basic steel sheets:

	Fr. per Metric Ton
0.5 mm.	1,400
1 mm.	1,100 to 1,250
1.5 mm.	1,075 to 1,225
2 to 2.5 mm.	980
3 mm.	925
Heavy sheets	750 to 780

Old Material.—Works being well provided, scrap prices are weak. Scrap for blast furnaces is quoted at 370 fr. per ton and machinery cast at 480 fr. per ton.

Montreal Meeting of Mechanical Engineers

The Montreal meeting of the American Society of Mechanical Engineers, to be held May 28 to 31 inclusive, now provides for a cooperative convention with the Engineering Institute of Canada. On Monday afternoon, May 28, will occur the business session of the meeting and hearings on the power test codes. On Tuesday morning will occur simultaneous sessions on power, management and railroad subjects. On Wednesday morning are arranged simultaneous sessions on power, materials handling and textiles. On Thursday morning are scheduled simultaneous sessions on general subjects, fuels and machine shops.

GERMAN PIG IRON RECEDES

First Change in Price Since Feb. 24—Steel Unchanged Since Feb. 21

(By Radiogram)

BERLIN, GERMANY, April 9.—Foundry iron No. 1 has dropped to 616,300 m. per metric ton ($29.74 per gross ton, at 4.75c. per 1000 m.) from the figure prevailing since Feb. 24, 648,300 m. ($28.98 at the 4.4c. exchange rate of that date).

Steel ingots remain at 749,000 m. ($36.14 now, compared with $33.48 on Feb. 21). Steel bars are 1,043,000 m. (2.25c. per lb., compared with 2.08c. per lb.). Thin steel sheets are 1,649,000 m. (3.55c. per lb., compared with 3.29c. per lb.).

[Advancing value of the mark has raised all these prices, on the gold basis, since they were pegged six weeks ago.—EDITOR.]

Comparison may be made with the prices of previous months, as given in the appended table, which shows not only the German prices but their equivalent gold prices at the several rates of exchange prevailing. It will be noted that all four products reached a high mark (in dollars) at the close of the year, thence falling to about 35 per cent of that value at the end of January. Another "high" was reached Feb. 19, at more than five times the figure of three weeks earlier. Present values are 18 to 24 per cent below those of Feb. 19.

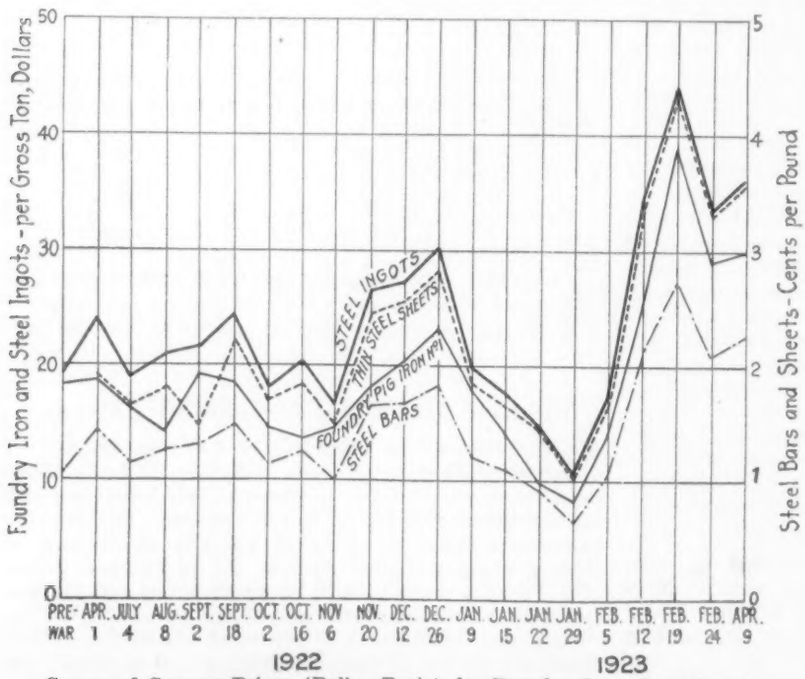
Date	Exchange C. per 1000 M.	Foundry Iron No. 1: Marks per Metric Ton	Foundry Iron No. 1: Equivalent per Gross Ton	Steel Ingots: Marks per Metric Ton	Steel Ingots: Equivalent per Gross Ton	Steel Bars: Marks per Metric Ton	Steel Bars: Cents per Pound	Thin Sheets: Marks per Metric Ton	Thin Sheets: Cents per Pound
April 9, 1923	4.75	616,300	$29.74	749,000	$36.14	1,043,000	2.25	1,649,000	3.55
Feb. 24	4.4	648,300	28.98	749,000	33.48	1,043,000	2.08	1,649,000	3.29
Feb. 19	5.1	745,800	38.64	849,000	43.99	1,183,000	2.74	1,870,000	4.33
Feb. 12	3.5	706,300	25.11	955,000	33.95	1,331,000	2.11	2,104,000	3.34
Feb. 5	2.7	506,300	13.89	623,000	17.09	860,000	1.05	1,341,000	1.64
Jan. 29	2.5	332,600	8.45	417,000	10.59	576,000	0.65	898,000	1.02
Jan. 22	5.0	194,900	9.90	293,900	14.93	406,000	0.92	632,900	1.44
Jan. 15	7.3	194,900	14.45	240,800	17.85	328,000	1.09	497,000	1.65
Jan. 9	9.9	179,400	18.04	197,300	19.84	270,000	1.21	414,700	1.86
Dec. 26, 1922	15.0	153,688	23.42	197,300	30.06	270,000	1.84	414,700	2.82
Dec. 12	12.5	159,390	20.24	214,300	27.21	293,200	1.66	450,300	2.55
Nov. 20	16.25	110,173	18.19	161,600	26.68	219,200	1.62	332,000	2.45
Nov. 6	16.9	83,994	14.40	96,700	16.58	132,000	1.01	196,000	1.50
Oct. 16	35.0	38,099	13.55	57,640	20.50	78,700	1.25	116,970	1.86
Oct. 2	53.75	27,413	14.50	34,370	18.18	46,930	1.144	69,750	1.70
Sept. 18	70.0	26,242	18.67	34,370	24.44	46,930	1.49	69,750	2.22
Sept. 2	77.5	24,491	19.28	27,530	21.68	37,020	1.30	41,580	1.46
Aug. 8	$1.325	10,481	14.11	15,670	21.09	21,070	1.266	30,330	1.823
July 4	2.20	7,261	16.23	8,520	19.04	11,470	1.145	16,490	1.645
April 1	3.30	5,549	18.60	7,170	24.04	9,500	1.445	12,770	1.91
Pre-war	238.20	75½	18.27	82½	19.34	98	1.06	.....	...

DECREASING GERMAN DEMAND

Prices Considered Too High—Ruhr Produces for Stock—Czecho-Slovakian Coal Strike Serious

BERLIN, GERMANY, March 21.—Buyers still follow a cautious policy. Business is generally quiet and demand is diminishing. Manufacturers and warehouses are again issuing stock lists, in some cases to push sales because of the prevailing scarcity of ready capital. In view of a possible scarcity of rolled material as a result of the stoppage of supplies from the Ruhr, some consumers in the engineering industry are laying in a stock of their usual requirements. A number of industrial building programs have been deferred, resulting in a further decrease in the demand for structural shapes which is usually lively during this season. The decrease in foreign demand caused by the improvement in German exchange is also beginning to be very noticeable.

The position of the iron and steel industry in the Ruhr is unaltered. As scarcely any material is leaving the occupied district, works are producing for stock. However this can continue only for a few weeks, and it is impossible to forecast the situation after that, as it will depend principally upon political developments. Imports into this district are less restricted, and the Siegerland mills continue to supply sheet iron to the occupied area.



Course of German Prices (Dollar Basis) for Foundry Iron, Steel Ingots, Bars and Sheets

A fair tonnage of rolled material is bought abroad, although prices are slightly higher than the domestic. Czecho-Slovakian works have advanced prices considerably lately, and are asking about 2110 kr. per ton for bar iron. Manufacturers are booked well ahead and decline any further orders. Some firms are now quoting in British currency and the same practice has been adopted in Austria. Quotations for British and Austrian bar iron, for instance, are about £12 per ton at the maker's works, which, because of the high cost of transportation, comes to about 1,400,000 m. in central Germany. The base price of the steel syndicate being 1,043,000 m., the domestic product is still cheaper.

Foundries report a decline in orders and there is less demand for pig iron. As any amount of British

material is obtainable, there is no scarcity, but available supplies for immediate delivery are decreasing. Quotations for British hematite are about 130s. per ton, Hamburg. At the present rate of exchange this is about 640,000 m., while the German works' guiding price is 678,000 m. For Upper Silesian material and for material produced with British fuel, prices are 708,000 m. and 785,000 m. respectively. British manufacturers, however, are asking higher prices for immediate delivery.

German purchases in Austria are less numerous lately. The greatest demand is satisfied and customers are more carefully considering prices. They are also purchasing directly from works whose prices have been unaltered since March 1, instead of buying from the warehouses, which recently advanced quotations 50 per cent.

The engineering industry is booking few orders for either domestic or foreign account at present, and machine tool makers are keeping their plants in operation on old contracts. It is not solely the rise in value of the mark and the general uncertainty which keep business at a low level, but prices are disproportionately high.

A small malleable casting which cost about 0.60 m. per kg. in 1913, now costs about 12,000 m. Bright screw iron, which was priced at 0.23 m. per kg. in 1913 is quoted at 4170 m. With prices for ordinary castings up to 10,000 times and other material up to 20,000 times the pre-war standard, and with the dollar at about 20,000 m., engineering firms throughout Germany are having great difficulty in meeting foreign competition.

At the Ostrau coal mines in Czecho-Slovakia, the men have gone on strike and the entire coal and coke production is held up. Stocks at the mines are low at present because of the heavy exports to Germany and Austria, and if the strike should continue for any length of time the stoppage of supplies from this district would seriously affect the Czecho-Slovakian and Austrian iron and steel industries. Production would have to be decreased, as the Ostrau works is the only important source of coke supplies with British coke almost impossible to procure. The export of iron and steel manufactures to Germany would therefore be greatly affected. The stoppage of coal and coke imports from Ostrau would also directly affect German industry, as large quantities have been secured from these mines.

French buyers have lately opened negotiations for the supply of Austrian iron and steel products and machines, especially Styrian pig iron. German firms are, however, declining orders, and such exports to France could in any case only be small, as the total Austrian pig iron export in 1922 amounted to only about 41,000 tons.

FRENCH SITUATION BETTER

Coke Supplies Improve—Prices Believed to Have Reached Peak—Production Restricted

PARIS, FRANCE, March 22.—It seems as though the iron and steel industry has now seen the worst of the crisis brought about by the occupation of the Ruhr. The recent decision to seize the stocks of coke piled at the Ruhr coke ovens is now being successfully executed, and it is expected that shipments from that source will soon reach 3000 tons a day, of which 90 per cent will go to France and 10 per cent to Belgium. The coke thus seized is being turned over to French metallurgists at the cost price of 170 fr., frontier. The improvement of the coke situation is reflected by the recent decision of the Société des Cokes de Hauts-Fourneaux to raise from 20 to 22 per cent the proportion of the potential consumption of coke of its members, to which will apply its minimum coke price of 198 fr. ($12.93), Franco-German frontier base. At the same time, the Société des Cokes de Hauts-Fourneaux decided to maintain for April its present minimum and maximum prices of 198 fr. ($12.93) and 310 fr. ($20.24) respectively.

Assisted by the rise of the franc from 16.27 fr. to the dollar on March 15 to 14.92 fr. on March 21, the prices of iron and steel products may have now reached a peak from which they are expected slowly to recede.

The recent difficulties between producers and consumers over prices of contracts entered into before the Ruhr occupation may be considered as definitely settled, most of the interested parties having agreed, at meetings last week, to halve the difference whenever possible.

Iron Ore.—French iron ores are now selling at the following prices f.o.b. at mines:

	Fr.	
Thionville	12 to 12.50	78c. to 82c.
Briey	15	98c.
Longwy	12	78c.
Carbonate and hematite, Normandy	35	$2.28
Pyrénées	30 to 32	$1.95 to 2.09

Pig Iron.—Prices at furnaces of chill-cast foundry iron No. 3 P. L. vary from 500 to 525 fr. The price of 550 fr. has even been paid for 800 tons to be delivered in March by a Lorraine furnace. British Cleveland No. 3 is 525 fr. ($34.28) f.o.b. Rouen. The following are prices for French hematite at furnaces: East, 520 fr. ($33.95); North, 540 to 570 fr. ($35.26); South, 520 to 560 fr. ($33.95 to $36.57); Center, 510 to 580 fr. ($33.30 to $37.87); delivered in Paris area, 550 to 560 fr. ($35.92 to $36.57).

As high as 580 fr. has been quoted for British East Coast hematite, delivered in Paris.

Semi-Finished Material.—No transaction is noted in basic, but open-hearth material is eagerly sought after. The following prices are approximately the market on open-hearth semi-finished steel:

	Fr. Per Metric Ton	
Ingots	600	$39.18
Blooms	620	40.48
Billets	650	42.45
Sheet billets	680	44.40

Beams.—A few tonnages have been sold in the East at 800 to 850 fr. ($52.24 to $55.50) for delivery within two months.

Rolled Merchant Products.—A few small tonnages for prompt delivery have been offered in the East at 800 to 900 fr. ($52.24 to $58.77).

Sheets.—Heavy sheets in small quantities are quoted for immediate delivery at 950 to 1000 fr. ($61.95 to $65.30); light sheets, for delivery within two or three weeks, at 1200 to 1250 fr. ($78 to $81).

All the foregoing quotations apply only to small tonnages. Most of the present restricted production is taken up in the execution of former contracts and, as long as the future continues so unsettled, producers will not care to bind themselves ahead for any large orders. However, the situation seems to be improving.

Lead is usually the most easily volatilized of all the metals thus far investigated by the Interior Department through its Bureau of Mines. Lead has been present in nearly every kind of ore treated by volatilization at the Intermountain station of the Bureau of Mines, and in nearly every test its recovery or extraction has been higher than that of of any other mineral constituent. Details of experiments in the volatilization of lead are given in Bulletin 211, which may be obtained from the Department of the Interior, Bureau of Mines, Washington, D. C.

An increase of 2879 men employed during the week erding March 27, over the previous week, was reported by the Employers' Association of Detroit. The total working force of the 79 firms reporting is 221,139, and the report for March shows an increase over February of 7349 men employed.

Iron and Steel Markets

WAGE ADVANCES GENERAL

March Steel Output a New Record for 30 Companies

Steel Corporation a Buyer of Steel—Coke Decline Marked

The advance of 11 per cent in steel plant wages generally announced this week and effective April 16 marks the appearance of competition from outdoor projects for the available supply of unskilled workers.

On the basis of 40c. an hour for common labor, instead of 36c., steel making costs are increased about $1.75 a ton. Prices have advanced much more than this since Sept. 1, when steel works wages last went up, but the great bulk of mill shipments, especially in the case of the Steel Corporation, are still at the lower prices of last fall.

Steel output for March, in line with that of pig iron, was heavy. Thirty reporting companies, representing 86 per cent of the capacity, made 3,402,000 tons of ingots, or a new high record for these companies. At 146,500 tons a day as the estimated March output for the country, steel production was at a yearly rate of 45,500,000 tons, whereas the greatest year's record was 43,619,200 tons in 1917.

The high rate at which steel is going from the mills is reflected in the Steel Corporation's unfilled tonnage statement with a gain of 119,000 tons in March as against 373,000 tons in February. From present indications April will show a loss.

The subsidence in new buying is more marked this week. Consumers, as a rule, are better supplied with steel than in some time, but there are manufacturing plants which are not receiving material as fast as needed, and with these jobbers are doing a larger business. However, important buyers are covered so well ahead that the question of paying today's high level prices on any considerable amount of steel does not have to be faced.

Interest in the sheet and tin plate market centers in the prices the Steel Corporation will soon name for the second half of the year. It is expected these will be nearer to the independent level, now commonly $5.75 for tin plate, than has been the case for some months.

Not only has the Steel Corporation had little semi-finished steel to sell, but it has been a buyer in the Pittsburgh district of 100,000 tons of slabs and 75,000 tons of pipe rounds. In part the deal involves delivering plates to car works connected with the steel plant selling the slabs.

Two large bar mills are sold up into the fall months. For early delivery bars 2.75c., Pittsburgh, has been paid on considerable shipments.

Besides buying upward of 2300 cars and inquiries for 1000 cars and 110 locomotives, a round lot of car repair orders was a feature.

Fabricated steel awards at 15,000 tons represent a drop from the average of over 30,000 tons in the preceding four weeks. Fresh inquiries, including 5000 tons for the Ford Motor Co.'s new steel plant at Dearborn, totaled over 25,000 tons, or not much below the recent average.

Rapid increase in pig iron output, softening of coke prices and inability of foundries to increase their output owing to labor shortage have made melters of foundry pig iron conservative about buying. With the exception of 15,000 tons of iron bought by a sanitary company, very little has been done for third quarter and the spot market is inactive. Charcoal iron is up 50c. a ton, but coke irons are at a stand. Stocks on Alabama furnace yards declined to 40,000 tons during the past month, and the situation of Southern companies is strong.

The coke market has declined sharply, largely because export shipment was cut off by congestion at the seaboard. Production exceeds contract requirements and furnace coke has sold as low as $6.25, against $7 last week. The demand for coal is so light that some mines are on the verge of suspension in view of the low prices.

Steel rails are expected to show well in the export trade, with German shipments cut off. Brazil is buying 160 miles of 50-lb. and 65-lb. rails. Germany lately sought 15,000 tons of ship plates here for early delivery, after placing 20,000 tons in Czecho-Slovakia. The 20,000 tons went at 2.50c. per lb. delivered at Kiel. For Japan nearly 20,000 boxes of tin plate have just been bought in New York.

German buying is causing resumptions in both Hungary and Austria. On higher sheet and tin plate prices in Great Britain, export sales there have diminished.

Unchanged for three weeks, THE IRON AGE pig iron composite price remains at $30.86 per gross ton, compared with $25.96 at the first of the year and $19.14 one year ago.

THE IRON AGE composite price for finished steel continues at 2.810c. per lb., compared with 2.446c. the first of the year and 2.084c. one year ago.

Pittsburgh

Slightly Easier Conditions—Higher Prices Not Expected

PITTSBURGH, April 10.—The 11 per cent increase in wages of iron and steel plant workmen effective next Monday is not generally expected to be the occasion for any further advances in prices. It had long been expected and has virtually been written into present day prices. It is possible that steel pipe may go up, as this product has had a considerably smaller rise than most other finished steel lines, and the Steel Corporation, which in the next few weeks will announce its last half prices on sheets and tin plate, probably will put those products at levels more consonant with current costs than are its present quotations. The belief prevails in a good many quarters that prices are high enough regardless of the wage increase, this feeling being partly the result of the record breaking pro-

A Comparison of Prices

Advances Over the Previous Week in Heavy Type, Declines in Italics

At date, one week, one month, and one year previous

For Early Delivery

Pig Iron, Per Gross Ton:	Apr. 10, 1923	Apr. 3, 1923	Mar. 13, 1923	Apr. 11, 1922
No. 2X, Philadelphia‡	$33.14	$33.14	$31.76	$22.34
No. 2, Valley furnace†	31.00	31.00	30.00	20.00
No. 2, Southern, Cin'ti†	31.05	31.05	31.05	20.00
No. 2, Birmingham, Ala.†	27.00	27.00	27.00	15.50
No. 2 foundry, Chicago*	32.00	32.00	31.00	20.00
Basic, del'd, eastern Pa.	30.25	30.25	29.50	21.00
Basic, Valley furnace	31.00	31.00	30.00	19.00
Valley Bessemer, del. P'gh	32.77	32.77	31.77	21.96
Malleable, Chicago*	32.00	32.00	31.00	20.00
Malleable, Valley	31.00	31.00	30.00	19.50
Gray forge, Pittsburgh	32.27	32.27	31.27	21.71
L. S. charcoal, Chicago	36.65	36.15	34.65	26.00
Ferromanganese, furnace	125.00	125.00	120.00	62.50
Rails, Billets, etc., Per Gross Ton:				
O.-h. rails, heavy, at mill	$43.00	$43.00	$43.00	$40.00
Bess. billets, Pittsburgh	45.00	45.00	45.00	29.50
O.-h. billets, Pittsburgh	45.00	45.00	45.00	29.50
O.-h. sheet bars, P'gh	47.50	47.50	45.00	31.00
Forging billets, base, P'gh.	52.00	52.00	52.00	34.50
O.-h. billets, Phila.	50.17	50.17	48.67	35.24
Wire rods, Pittsburgh	50.00	50.00	50.00	38.00
	Cents	Cents	Cents	Cents
Skelp, gr. steel, P'gh, lb.	2.35	2.35	2.35	1.50
Light rails at mill	2.25	2.25	2.15	1.50
Finished Iron and Steel,				
Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Iron bars, Philadelphia	2.825	2.825	2.725	1.81
Iron bars, Chicago	2.60	2.60	2.50	1.60
Steel bars, Pittsburgh	2.50	2.50	2.35	1.50
Steel bars, Chicago	2.84	2.84	2.35	1.60
Steel bars, New York	2.84	2.84	2.69	1.88
Tank plates, Pittsburgh	2.50	2.50	2.35	1.50
Tank plates, Chicago	2.84	2.84	2.50	1.60
Tank plates, New York	2.84	2.84	2.69	1.78
Beams, Pittsburgh	2.50	2.50	2.35	1.50
Beams, Chicago	2.84	2.84	2.45	1.60
Beams, New York	2.84	2.84	2.69	1.88
Steel hoops, Pittsburgh	3.30	3.30	3.05	1.90

*The average switching charge for delivery to foundries in the Chicago district is 61c. per ton.
†Silicon, 1.75 to 2.25. ‡Silicon, 2.25 to 2.75.

Sheets, Nails and Wire,	Apr. 10, 1923	Apr. 3, 1923	Mar. 13, 1923	Apr. 11, 1922
Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Sheets, black, No. 28, P'gh	4.00	4.00	3.75	3.15
Sheets, galv., No. 28, P'gh	5.25	5.25	4.85	4.15
Sheets, blue an'l'd, 9 & 10	3.25	3.25	2.90	2.40
Wire nails, Pittsburgh	2.90	2.90	2.80	2.40
Plain wire, Pittsburgh	2.65	2.65	2.65	2.25
Barbed wire, galv., P'gh	3.70	3.70	3.45	3.05
Tin plate, 100-lb. box, P'gh	$6.00	$6.00	$4.95	$4.75
Old Material, Per Gross Ton:				
Carwheels, Chicago	$28.50	$28.50	$28.50	$18.25
Carwheels, Philadelphia	27.00	27.00	26.00	15.75
Heavy steel scrap, P'gh	26.00	27.00	24.00	16.00
Heavy steel scrap, Phila.	24.50	24.50	25.00	14.00
Heavy steel scrap, Ch'go	23.00	23.00	24.00	13.25
No. 1 cast, Pittsburgh	28.00	28.00	26.00	16.50
No. 1 cast, Philadelphia	27.00	27.00	28.00	17.00
No. 1 cast, Ch'go (net ton)	26.50	26.50	26.00	14.75
No. 1 RR. wrot., Phila.	28.00	28.00	27.00	16.00
No. 1 RR. wrot., Ch'go (net)	20.50	20.50	21.00	11.75
Coke, Connellsville, Per Net Ton at Oven:				
Furnace coke, prompt	$6.25	$7.00	$7.50	$4.00
Foundry coke, prompt	7.75	8.50	8.25	4.75
Metals,				
Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Lake copper, New York	17.37½	17.37½	17.12½	12.87½
Electrolytic copper, refinery	17.00	17.12½	16.75	12.62½
Zinc, St. Louis	7.45	7.65	7.80	4.92½
Zinc, New York	7.80	8.00	8.15	5.27½
Lead, St. Louis	8.15	8.20	8.25	4.80
Lead, New York	8.40	8.50	8.60	5.00
Tin (Straits), New York	46.50	47.62½	51.50	30.50
Antimony (Asiatic), N. Y.	8.50	8.75	8.87½	4.75

The prices in the above table are for domestic delivery and do not necessarily apply to export business.

Composite Price, April 10, 1923, Finished Steel, 2.810c. Per Lb.

Based on prices of steel bars, beams, tank plates, plain wire, open-hearth rails, black pipe and black sheets

These products constitute 88 per cent of the United States output of finished steel

April 3, 1923,	2.810c.
March 13, 1923,	2.710c.
April 11, 1922,	2.084c.
10-year pre-war average,	1.689c.

Composite Price, April 10, 1923, Pig Iron, $30.86 Per Gross Ton

Based on average of basic and foundry irons, the basic being Valley quotation, the foundry an average of Chicago, Philadelphia and Birmingham

April 3, 1923,	$30.86
March 13, 1923,	29.96
April 11, 1922,	19.14
10-year pre-war average,	15.72

duction and shipments of steel last month, the reflex of which is that as a general rule buyers are more comfortably supplied with steel than they have been before in some time.

Moreover buyers long accustomed to low-priced materials now seem to be balking a little at the prices which now are demanded. While there is still some premium business, it is on a much smaller tonnage than was the case recently, with the possible exception of sheets, a number of makers of which still are taking specified orders in distinction to contracts, and are fitting prices to the purses of buyers. The wage increase will add only an insignificant amount to the cost of making pig iron and while this development may possibly have the effect of checking price concessions, the market reflects no disposition to move upward on the strength of it.

The scrap market has gone off about $1 a ton on the open-hearth grades, and a very weak market in coal and coke is not without its effect upon the general situation. Fears that the production of coke and coal in nonunion districts might be affected by a recurrence of labor disturbances would seem to be without foundation actually. No trouble has developed in the Connellsville district and observance of Easter holidays, which is a double affair because of different calendars, has not prevented that district from producing a good deal more coke than has been needed. We note a decline of 75c. per ton in coke prices since a week ago, because the shutting off of export business has thrown large quantities on the market, for which there has been only a limited demand.

There has been very little change in steel plant operations in the past week and the general average is close to that for the past month. The Carnegie Steel Co., which ended March practically full capacity, has lost a little ground as a result of labor shortages, and the American Sheet & Tin Plate Co. has also slid back slightly, chiefly because of a shortage of open-hearth steel. Other companies are holding about their recent rates. The Weirton Steel Co. this week blew in its blast furnaces and the second furnace of the McKinney Steel Co., Josephine, Pa., started making iron late last week. This leaves only 13 idle furnaces out of 138 in this and nearby districts.

Pig Iron.—The Standard Sanitary Mfg. Co. recently closed for 15,000 tons of foundry iron for third quarter delivery for its Northern plants at prices averaging about $31 for No. 2 grades. This is the only important business lately done and incidentally marks the only important deviation among buyers from a policy of holding back on their third quarter

requirements. That company paid as high as $32, Valley furnace, for some of its iron, but was able to purchase a round lot from another Valley furnace interest which is accumulating a back log at $30.50 for No. 2 iron. Figuring on the present differential of $1 per ton between No. 2 and No. 2X grades, this sale was equivalent to $29.50 for the former. The same company also recently bought 1000 tons of southern Ohio foundry iron at $31, Ironton, for its Southern plant. Very little interest is observed in the steel making grades, but a fairly good demand has been noted for malleable iron, of which we note a sale of one round tonnage at $31, Valley furnace, while a local maker of valves recently closed for 500 tons at $30.50, with a Valley furnace interest anxious to build up a back log. We make no change in quotations, but the market is better described as steady rather than firm, since activity is lacking. The number of furnaces in blast is unusually large, melters are well covered against their second quarter requirements and there is considerable doubt that coke prices for third quarter will be as high as they are for the present quarter.

We quote Valley furnace, the freight rate for delivery to the Cleveland or Pittsburgh district being $1.77 per gross ton:

Basic	$31.00
Bessemer	31.00
Gray forge	$30.50 to 31.50
No. 2 foundry	31.00 to 32.00
No. 3 foundry	30.50 to 31.50
Malleable	31.00
Low phosphorus, copper free	36.00

Ferroalloys.—An alarmist report as to the supplies of ferromanganese from abroad in another publication has found no basis in fact. Local consumers having British material under contract report full shipments on their March quotas and the assurance of full performance against the remaining tonnages due them. There has been no disposition to seek additional tonnages because of a possible foreign shortage. As a whole, the ferroalloys market has been very quiet, due to the fact that consumers are well covered by contracts and shipments against such commitments are right up to quotas. Prices are unchanged. They are given on page 1072.

Iron and Steel Bars.—Makers here still are turning down a good deal of business in steel bars, but there is not the urgency to the demand there was recently and sales at maximum quotations are fewer and represent much less tonnage than was the case recently. We note cases where mills apparently well filled up are fitting in additional tonnages to regular customers at 2.35c. and 2.45c., and on a recent inquiry by the New York Central lines one local mill quoted 2.35c. and another 2.40c. Iron bars have been advanced $5 per ton to 3.25., base, for refined iron.

We quote steel bars rolled from billets at 2.35c. to 2.75c.; rail steel reinforcing bars, 2.25c. to 2.35c.; refined iron bars, 3.25c. in carloads, f.o.b. mill, Pittsburgh.

Wire Products.—The past week has brought about no material change in the situation either as regard demands or prices. Pressure for supplies still is extremely heavy and there is no lack of opportunity for the manufacturers to put on their books third quarter business. This they are not ready to do and most of the demands for supplies for delivery before July 1 are being rejected. Prices are given on page 1072.

Plates.—Some business for early delivery carrying prices well above the regular quotation still is being done, but it is on a much smaller scale than recently. We note sales aggregating about 500 tons at 2.90c. to 3c. base, mill, with a freight into this district of 23c. per 100 lb., but local mills have no such price ideas and actually quoted 2.45c., base, Pittsburgh, on a recent inquiry of the New York Central lines. Tank makers in this district, basing their quotations on the present prices of plates, are getting no orders. Prices are given on page 1072.

Structural Material.—The supply situation is slightly easier as a result of the big production and shipments of last month, but the mills still have pretty substantial obligations and are not able to yet advance probable delivery dates on new business. There is still some bidding up of prices by buyers who want supplies in a hurry, but tonnages involved usually are small. Structural shops in this district are well engaged. A good many of the recent awards have been high tension transmission towers. Plain material prices are given on page 1072.

Semi-Finished Steel.—Supplies are virtually non-extant, since, as is common to periods of unusual demand for finished products such as the present one, producers speed up finishing mill operations and have little or no unfinished steel for sale. We note a sale of a moderate-sized tonnage of pipe skelp at 2.35c., Pittsburgh, to a Western pipe maker, but sales of all other kinds of semi-finished steel are absent for want of supplies. A Southern producer of hot-rolled flats is scouring this market for 10,000 tons of billets and has been unable to find even a fractional part of that tonnage. The Steel Corporation has no steel for sale; indeed, it is a buyer rather than a seller, recently having bought 100,000 tons of slabs and 75,000 tons of tube rounds for delivery over the remainder of the year, the slabs to go to Carnegie Steel Co. and the rounds to the National Tube Co. This steel will come from a nearby industrial plant with greater steel producing than consuming capacity. The most recent sale of sheet bars involved 2000 tons of open-hearth steel at $47.50, Youngstown. Prices generally are nominal and merely are approximations of what might be done if the steel was available. Wire rods probably would do $55, base, if they were available, but no sales actually are reported at that figure. Finishing mill operations are at a lower percentage to the whole than steel works, but this does not mean any surplus of steel for the reason that there is more finishing than steel producing capacity. The Carnegie Steel Co. lost a little ingot production last week through loss of labor incident to the observance of Easter holidays. Prices are given on page 1072.

Steel Rails.—There is no change in light rails, which are quoted by all makers at 2.25c. base, mill. There is just a fair demand, the coal companies being very sparing buyers since the demand for coal is so light that only partial operations are possible and a number of operations are on the verge of suspension because of the very low prices which prevail.

We quote 25 to 45-lb. sections, rolled from new steel, 2.25c. base; rolled from old rails, 2.25c. base; standard rails, $43 per gross ton mill for Bessemer and open-hearth sections.

Tin Plate.—The market is quieter, but this condition is largely explained by the fact that there is almost nothing to sell for delivery over the remainder of the current quarter and none of the mills yet is willing to entertain third quarter or last half supplies. Stock items are very closely sold up and production sales recently made have put the sellers out of the market for the current half year. Some makers are canvassing regular customers in an effort to ascertain their probable last half requirements, but no prices have been mentioned. Official quotations range from $4.95 to $5.25 per base box, Pittsburgh, but on the few sales recently made for early shipment, the prevailing figure was $6. Present obligations of the leading interest are understood to be sufficient to carry it through most of the third quarter.

Cold-Finished Steel Bars and Shafting.—Makers in this district are holding firmly to a minimum of 3c., base, Pittsburgh, on carload lots and some are asking up to 3.10c., base. Second quarter contracts were entered anywhere from 2.80c. to 3c., but on account of slow deliveries of hot-rolled bars, there is still a considerable tonnage due and moving against older obligations at much lower prices. It is only on supplies for very prompt delivery that more than 3c. to 3.10c. is being obtained and such cases are rather few, while the average current shipments is well below 3c. An interesting development of the past week is the expressed desire of automobile builders to place their second half requirements, which are well up to those of the first half, at current prices or those in effect at time of shipment. Ground shafting is unchanged at 3.40c., base, f.o.b. mill, for carloads.

Track Fastenings.—Prices in this district show no change. Good steady demand is noted for railroad

spikes. The Baltimore & Ohio Railroad was a recent buyer of between 6000 and 7000 kegs at market prices and it also specified on a large quantity due on old contract. Makers of tie plates here are well committed and not anxious for more business. One maker here has advanced the prices of boat and barge spikes to $3.75 base per 100 lb. This maker has not sold at the new price, but has no more for sale at the old figure. Prices are given on page 1072.

Tubular Goods.—Practically all makers of steel pipe have been able to operate fuller and to ship more freely in the past month than before in some time, and distributors' supplies accordingly have improved. All mills have at least three months' business ahead of them and their refusal to depart from a policy of shipping only on a basis of average allotments to individual customers seems to have impressed jobbers with the futility of trying to increase their stocks. It is possible, now that wages are to be increased, that the expected advance in prices may be forthcoming. The margin of profit on wrought iron pipe has grown pretty slim lately and in the event that steel pipe goes up, higher prices may also be expected on wrought iron pipe. Demand for boiler tubes still is far in excess of the capacity of the mills and makers might well become filled up for the remainder of the year if they were disposed to take on all the business offered. Discounts are given on page 1072.

Sheets.—Buyers who must have specified deliveries are forced to depend upon those mills which have elected to take orders instead of contracts, and this means paying prices close to the maximum. Few makers have any galvanized sheets for sale for early delivery. On black sheets 4c. is the going market price, and blue annealed sheets are hard to secure for reasonably early delivery below 3.25c., base. It is expected there will be some narrowing of the spread between Steel Corporation and independent prices when the last half prices of the corporation are announced, as it is expected they will be on or before May 1. It is doubtful whether the leading interest will have much tonnage for delivery until well into the third quarter. Prices are given on page 1072.

Hot-Rolled Flats.—There has been no change in prices since a week ago, the market being quotable at a general minimum of 3.30c. base, Pittsburgh, on the easily rolled gages and widths. Some makers of hot-rolled strips still are taking business at 3.25c., but others are up to 3.50c. As a minimum on light gage narrow hoops, as high as 3.75c. is being asked. The mills are well filled up with business, but only a small part of it carries today's prices. Quotations are given on page 1072.

Cold-Rolled Strips.—The going market on this product is 5.25c. base, Pittsburgh. Some makers still are honoring demands from regular customers at 5c. base, but there are occasional sales also as high as 5.50c. base.

Bolts, Nuts and Rivets.—Those makers of bolts and nuts who did not make the recent advance have done so in the past week and all now are on the single price basis. Specifications are reported to be good, but they are against contracts entered before prices advanced. There is no change in rivets, but the market has stiffened on washers, due to a scarcity of raw material. They now are quoted at $4.25 per 100 lb. off list. Other prices and discounts will be found on page 1072.

Coke and Coal.—The coke market has declined sharply since a week ago, largely as a result of the shutting off of export business, on account of congestions at the seaboard piers and the fact that production has continued considerably in excess of contract requirements. Reports that railroad embargoes were about to be lifted on export tonnage has strengthened the market slightly, but good furnace coke was obtainable today as low as $6.25 per net ton at ovens, and while some business was reported as high as $7 this was both exceptional and extreme. There has been fully as great a decline in foundry coke for prompt shipment, prices of which range from $7.75 to $8.50. The coal market still reflects in price the very slack demand. Mine run steam coal for spot shipment still is quotable as low as $1.85 per net ton at mines, while $2 seems to be the limit on high-grade steam coal. Mine run gas and coking coal for spot delivery is quotable from $2.50 to $3.

Old Material.—The Pittsburgh Steel Co. recently bought slightly more than 10,000 tons of heavy melting steel at $26 per gross ton delivered. This business definitely established this grade at that figure and there has been a corresponding revision downward in other open-hearth grades. The market, though lower, is by no means weak and close observers expect the market to fluctuate between a narrow range for the next few months. Railroad lists are running heavy, but judging by the results on the Pennsylvania Railroad offerings, the effect upon prices is negligible. Steel scrap offered by that road last week was sold at $28, delivered Canton, Ohio. This would figure about $26 here. The combined offerings of the Pennsylvania Lines was about 50,000 net tons, while the Baltimore & Ohio list, which closes at noon, April 16, offers 21 cars and 27,000 gross tons and that of the Norfolk & Western, on which bids will be received until noon, April 11, amounts to approximately 8000 gross tons. This market still is strong on foundry grades and the lighter materials like turnings and borings.

We quote for delivery to consumers' mills in the Pittsburgh and other districts taking the Pittsburgh freight rate as follows:

Per Gross Ton

Heavy melting steel	$26.00
No. 1 cast, cupola size	$28.00 to 28.50
Rails for rolling, Newark and Cambridge, Ohio; Cumberland, Md.; Huntington, W. Va.; and Franklin, Pa.	28.00 to 28.50
Compressed sheet steel	24.50 to 25.00
Bundled sheet sides and ends	23.50 to 24.00
Railroad knuckles and couplers	28.50 to 29.00
Railroad coil and leaf springs	28.50 to 29.00
Low phosphorus standard bloom and billet ends	32.50 to 33.00
Low phosphorus, plates and other grades	30.00 to 30.50
Railroad malleable	27.00 to 27.50
Locomotive axles, steel	36.00 to 37.00
Steel car axles	30.00 to 31.00
Cast iron wheels	27.50 to 28.00
Rolled steel wheels	28.50 to 29.00
Machine shop turnings	21.50 to 22.00
Heavy steel axle turnings	22.50 to 23.00
Short shoveling turnings	22.00 to 22.50
Cast iron borings	22.00 to 22.50
Heavy breakable cast	25.50 to 26.00
Stove plate	21.00 to 21.50
Sheet bar crop ends	29.00 to 30.00
No. 1 railroad wrought	22.00 to 23.00

Management week, by which is meant the planning of a definite week for the presentation of papers on management at different places throughout the country, has been set for Oct. 22 to 27 inclusive. The management division of the American Society of Mechanical Engineers, the Taylor Society and the Society of Industrial Engineers are cooperating in planning for the meeting, following the arrangement that was made last year.

The third annual convention of the National Association of Winchester Clubs will be held in the Coliseum, Chicago, June 25, 26, 27 and 28. A few more than 1000 hardware and sporting goods dealers attended the first convention, and 1500, it is stated, were in attendance at the second gathering, both of which were held in New Haven.

The March report of the public employment office, Boston, shows that 1389 positions were filled through that office during the month, or 32 per cent more than in February. The demand from metal trades, with calls from nearly every branch of that industry, dominated the men's skilled department.

On March 1, 1923, American shipyards were building or under contract to build for private shipowners 242 steel vessels of 280,278 gross tons, compared with 235 steel vessels of 302,047 gross tons on Feb. 1, 1923. These figures do not include Government ships or ships building or contracted for by the United States Shipping Board.

Chicago

Prices Will Probably Not Advance on Account of New Wage Scale

CHICAGO, April 10.—The 11 per cent wage advance, to be put in effect by Steel Corporation subsidiaries next Monday, has been followed in the Chicago district by the Inland Steel Co., and early action by other independents is expected. Although no definite announcements have been made one way or the other, the general belief of the trade is that prices will not be affected, at least not immediately. While costs will be higher under the new wage scale, steel prices have gone up rather steadily since the first of the year and may now be on a level which will permit profitable mill operations, in the face of higher labor. It would appear that producers wish to hold the market in check, realizing that prices might be carried so high as to discourage demand. Current consumption of steel is heavy and constitutes a most encouraging feature of the market. The only limitation on consumption is the supply of steel available from the mills. In fact, if demand is less urgent than heretofore, it is because users regard it as futile to try to place additional business with the producers when they are so heavily sold ahead. Mill operations here are substantially unchanged.

Pig Iron.—The market is quiet, although not entirely inactive. A Michigan manufacturer of automotive parts has closed for 4000 tons of Northern foundry for July and August shipment. Other sales for third quarter shipment have been made, giving the furnaces a substantial initial back log for that period, and at the same time additional second quarter iron continues to be bought. In some instances melters have taken more business in castings than they expected, and find that they must add to their previous purchases. One user of this class just closed for 3000 tons for April and May delivery. An eastern Michigan automobile manufacturer has entered the market for 1000 tons of No. 1 foundry for immediate shipment. There continues to be a steady demand for spot iron, which is accounted for in part by slow deliveries against orders placed with Southern furnaces. Prices of both Northern and Southern iron remain unchanged. Charcoal iron has advanced 50c. a ton to $33.50, furnace. A Southern furnace has taken some business in low phosphorus in this section at from $3 to $4 below the quotations of other producers.

Quotations on Northern foundry high phosphorus malleable and basic irons are f.o.b. local furnace and do not include an average switching charge of 61c. per ton. Other prices are for iron delivered at consumers' yards or, when so indicated, f.o.b. furnace other than local.

Lake Superior charcoal, averaging sil. 1.50, delivered at Chicago	$36.65
Northern coke, No. 1 sil. 2.25 to 2.75	33.00 to 34.00
Northern coke foundry No. 2, sil. 1.75 to 2.25	32.00 to 33.00
Malleable, not over 2.25 sil	32.00 to 33.00
Basic	32.00 to 33.00
High phosphorus	32.00 to 33.00
Southern No. 2	33.01
Low phos., sil. 1 to 2 per cent copper free	36.00 to 37.00
Silvery, sil. 8 per cent	44.29

Ferroalloys.—A St. Louis district melter who was in the market for 600 tons of spiegeleisen was able to obtain only a portion of that tonnage. A local user bought 200 tons at approximately $41, furnace, but spiegeleisen has grown so scarce that it is doubtful whether less than $45 can be done now. An inquiry for 150 tons of ferromanganese is current.

We quote 80 per cent ferromanganese, $127.56 to $132.56, delivered; 50 per cent ferrosilicon, $95, delivered; spiegeleisen, 18 to 22 per cent, $53.58, delivered.

Rails and Track Supplies.—Sales of rails to frog and switch manufacturers aggregate 9000 tons. Inquiries for 100,000 tons from Western railroads are still pending and in view of the present crowded condition of mill books, it is doubtful whether deliveries can be obtained before the close of the year. The fact that rails are now lower than semi-finished steel has caused no little comment, but inasmuch as mills cannot promise deliveries much before 1924, an advance is not looked for at this time. A local mill has taken orders for 25,000 kegs of spikes and bolts. Demand for light rails continues to lag.

Standard Bessemer and open-hearth rails, $43; light rails, rolled steel, 2.25c., f.o.b. makers' mills.

Standard railroad spikes, 3.25c. mill; track bolts with square nuts, 4.25c. mill; iron tie plates, 2.85c. mill; steel tie plates, 2.60c., f.o.b. mill; angle bars, 2.75c., f.o.b. mill.

Jobbers quote standard spikes out of warehouse at 3.80c. base and track bolts, 4.80c. base.

Plates.—Railroad cars ordered so far this year total 77,000, or 43 per cent of the number purchased by American roads during the entire year 1922. Lettings during the past week aggregate nearly 8000 cars, requiring 100,000 tons of steel, most of which, however, will be supplied by mills east of here. Demand for plates is not so urgent as heretofore. Consumers know that mills are booked far ahead and apparently regard it as futile to press the market for any material additions to the tonnage which they now have on mill books. The price situation remains substantially unchanged, although the market on steel for specific delivery is not clearly defined owing to few mills having tonnage to sell.

The mill quotations is 2.50c., Chicago for indefinite delivery and 2.84c. to 3.19c. delivered Chicago for specific shipment. Jobbers quote 3.30c. for plates out of stock.

Structural Material.—Building activity shows substantial gains throughout the West and is held in check only by the scarcity of materials. The demand for fabricated steel is far beyond the ability of mills to produce plain material. Fabricators likewise are heavily obligated, some of them for seven months. The situation has been reflected in another decline in lettings, which probably forecasts the suspension of much contemplated work until better deliveries are again available.

The mill quotation on plain material is 2.50c., Chicago for indefinite delivery. We quote 2.84c. to 3.19c. delivered Chicago for plain material for specific shipment. Jobbers quote 3.30c. for plain material out of warehouse.

Bars.—Demand for soft steel bars remains heavy, although consumers are becoming reconciled to the fact that they cannot obtain their full requirements and are less disposed to pay premiums for prompt material. Automobile production is at the highest level in the history of the industry. The demand for concrete bars for road building and other construction work is practically 100 per cent greater than the supply available from the mills. The business of farm implement makers continues to increase and they are making every effort to obtain additional material to carry out their expanding manufacturing programs. The price situation shows no material change. Owing to the heavy demand for bar iron, one important local mill went on double turn today with about eight weeks' work ahead of it. Rail steel bar mills are enjoying a steady volume of business, but it appears that at least one producer is still selling at 2.30c., mill, notwithstanding recent advances by other interests to 2.40c.

Mill prices are: Mild steel bars, 2.40c., Chicago for indefinite delivery and 2.84c. to 3.19c. for specific delivery; common bar iron, 2.60c. to 2.75c. Chicago; rail steel, 2.30c. to 2.40c., Chicago mill.

Jobbers quote 3.20c. for steel bars out of warehouse. The warehouse quotation on cold-rolled steel bars and shafting is 4.30c. for rounds and 4.80c. for flats, squares and hexagons.

Jobbers quote hard and medium deformed steel bars at 3c. base; hoops, 4.55c.; bands, 3.95c.

Wire Products.—Mills still find it necessary to limit their new commitments, although demand continues active. Demand for deliveries against orders on mill books is unabated. For mill prices, see finished iron and steel, f.o.b. Pittsburgh, page 1072.

We quote warehouse prices f.o.b. Chicago: No. 6 to No. 9 bright basic wire, $3.75 per 100 lb., extra for black annealed wire, 15c. per 100 lb.; common wire nails, $3.80 per 100 lb.; cement coated nails, $3.25 per keg.

Cast Iron Pipe.—The price situation remains unchanged except that the extra for class A and gas pipe has been advanced to $5. Fort Atkinson, Wis., has awarded 200 tons to James B. Clow & Sons. J. M. Donahu, Stevens Point, Wis., is low bidder on the general contract for 714 tons for Mount Greenwood, Ill. Hinsdale, Ill., today takes bids on the general contract for 135 tons of 4- and 6-in. Staples, Minn., receives tenders April 13 on 150 tons of 4- and 6-in.

We quote per net ton, f.o.b. Chicago, as follows: Water pipe, 4-in., $61.20 to $62.20; 6-in. and above, $57.20 to $58.20; class A and gas pipe, $5 extra.

Bolts and Nuts.—The 10 per cent advance announced by Eastern makers has not been followed by producers in this district. Specifications were very heavy just prior to the close of the first quarter, as buyers wished to take advantage of the lower prices which governed their contracts for that period. However, orders against second quarter contracts, taking the March 1 discounts, are commencing to come in in good volume. The Ford Motor Co. is buying 60 to 90 days' requirements while automobile manufacturers with contracts are specifying freely. Implement makers, who appear to be maintaining operations at over two-thirds of capacity, are also a steady source of business. Prices on structural rivets appear to range from $3.35 to $3.50, with boiler rivets 10c. higher.

Jobbers quote structural rivets, 4c.; boiler rivets, 4.10c.; machine bolts up to ¾ x 4 in., 45 and 5 per cent off; larger sizes, 45 and 5 off; carriage bolts up to ⅝ x 6 in., 40 and 5 off; larger sizes, 40 and 5 off; hot pressed nuts, squares and hexagons, tapped, $2.50 off; blank nuts, $2.50 off; coach or lag screws, gimlet points, square heads, 50 and 5 per cent off.

Sheets.—Demand continues strong, although not so pressing as heretofore. It is notable that light black sheets are not commanding prices commensurate with those obtained for galvanized and blue annealed. Ruling quotations appear to be 3.90c. to 4c., base Pittsburgh, for black, 3c. for blue annealed and 5c. for galvanized. Numerous sales of galvanized and blue annealed are being made at higher levels, but those transactions cover small tonnages. Local mills remain out of the market.

Mill quotations are 3.90c. to 4c. for No. 28 black, 3c. to 3.50c. for No. 10 blue annealed and 5c. to 5.50c. for No. 28 galvanized, all being Pittsburgh prices, subject to a freight rate to Chicago of 34c. per 100 lb.

Jobbers quote, f.o.b. Chicago, 4.15c. for blue annealed, 5c. for black and 6.10c. for galvanized.

Reinforcing Bars.—In the face of sustained activity in building construction, concrete bar sellers are increasingly cautious in adding to their present commitments. Owing to the policy of the mills in allocating their tonnage among customers, reinforcing bar dealers cannot anticipate with any degree of accuracy the tonnage which will actually be delivered to them on contracts now on mill books.

Pending work includes:

Fourteenth Street Viaduct, St. Louis, 500 tons.

Federal Reserve Bank, St. Louis, 300 tons of re-rolled steel.

Club building, 1244 North Dearborn Street, Chicago, 300 tons.

Independent Casing Co. plant, Chicago, 100 tons.

Anna Sommers apartment building, Chicago, 200 tons.

Hotel Spencer, Marion, Ohio, 125 tons.

Commodore Hotel, Chicago, 575 tons, general contract awarded to Fitzgerald Construction Co.

Baltimore & Ohio grain elevator, Locust Point, Md., 2000 tons, John S. Metcalfe Co., Chicago, engineer; taking of bids on general contract postponed until April 10.

Hotel, East St. Louis, Ill., 250 tons.

Twelfth Church of Christ, Scientist, Chicago, 100 tons.

Awards include:

Coca-Cola building, Chicago, 300 tons to Concrete Engineering Co.

Madison Street bridge, Eau Claire, Wis., 335 tons to Olney J. Dean.

Underground Construction Co., Chicago, 130 tons for Illinois Central Railroad work, Chicago, to Concrete Steel Co.

Freight house for New York Central, Toledo, Ohio, 175 tons to Corrugated Bar Co.

Hotel building, Drexel Boulevard and Forty-second Street, Chicago, 150 tons to Kalman Steel Co.

Illinois Central Railroad bridge at Thirty-ninth Street, Chicago, 100 tons to Kalman Steel Co.

Polk Publishing building, Detroit, 200 tons to McRae Steel Co.

Orling Bros. packing plant, Detroit, 125 tons to McRae Steel Co.

Bedell building, Detroit, 100 tons to McRae Steel Co.

Gibbs Inman Co. Garage, Louisville, Ky., 400 tons to Corrugated Bar Co.

Oklahoma road work, 300 tons to Corrugated Bar Co.

Missouri Theater, St. Louis, 300 tons to Laclede Steel Co.

Hesse Envelope Co. plant, St. Louis, 150 tons to Laclede Steel Co.

Superior Box Co. plant, St. Louis, 100 tons to Laclede Steel Co.

Old Material.—Prices continue to decline and the downward trend has been accelerated by an almost complete cessation of consumer buying. Yard accumulations are still being liquidated, although offerings are not so large as a week or two ago. It is still believed that there is no real surplus of supply and that as soon as users re-enter the market on a broad scale, prices will stiffen. Railroad offerings include the St. Paul, 1500 tons, the Soo Line 1000 tons, and the Chicago & Eastern Illinois 800 tons.

We quote delivery in consumers' yards, Chicago and vicinity, all freight and transfer charges paid, as follows:

Per Gross Ton	
Iron rails	$27.00 to $27.50
Cast iron car wheels	28.50 to 29.00
Relaying rails, 56 and 60 lb.	28.50 to 29.50
Relaying rails, 65 lb. and heavier	32.00 to 35.00
Rolled or forged steel car wheels	28.50 to 29.00
Rails for rolling	24.00 to 24.50
Steel rails, less than 3 ft.	26.00 to 26.50
Heavy melting steel	22.50 to 23.00
Frogs, switches and guards cut apart	22.50 to 23.00
Shoveling steel	22.00 to 22.50
Drop forge flashings	19.50 to 20.00
Hydraulic compressed sheets	20.00 to 20.50
Axle turnings	20.00 to 20.50
Per Net Ton	
Iron angle and splice bars	26.00 to 26.50
Steel angle bars	22.00 to 22.50
Iron arch bars and transoms	26.00 to 26.50
Iron car axles	30.00 to 30.50
Steel car axles	24.50 to 25.00
No. 1 busheling	19.00 to 19.50
No. 2 busheling	14.00 to 14.50
Cut forge	20.00 to 20.50
Pipes and flues	16.00 to 16.50
No. 1 railroad wrought	20.00 to 20.50
No. 2 railroad wrought	20.00 to 20.50
Steel knuckles and couplers	25.00 to 25.50
Coil springs	26.00 to 26.50
No. 1 machinery cast	26.00 to 26.50
No. 1 railroad cast	24.50 to 25.00
No. 1 agricultural cast	24.00 to 24.50
Low phos. punchings	22.50 to 23.00
Locomotive tires, smooth	23.50 to 24.00
Machine shop turnings	14.00 to 14.50
Cast borings	16.00 to 16.50
Short shoveling turnings	16.00 to 16.50
Stove plate	21.50 to 22.00
Grate bars	21.00 to 21.50
Brake shoes	22.00 to 22.50
Railroad malleable	25.00 to 25.50
Agricultural malleable	24.00 to 24.50

Toronto Scrap Market

TORONTO, April 9.—With an exceptionally strong market now prevailing prices on iron and steel scrap have again been revised upward. While the advance has been general some commodities show much greater increases than others. On heavy melting steel, dealers have increased prices $1 per gross ton and are now offering $18, delivered Hamilton; steel turnings are up a like amount and are being purchased at $14 per gross ton, Hamilton; heavy axle turnings are in very strong demand at present and dealers have found it necessary to make a big advance in the price they are offering on this commodity, which is now holding at $17 per gross ton, Toronto. No. 1 machine cast is up $2 per net ton with dealers now offering $23, Toronto; malleable scrap has been advanced from $15 to $18 per net ton; stove plate from $15 to $18 per net ton and standard car wheels from $17 to $18 per net ton, Toronto. Notwithstanding that dealers have increased their buying prices on scrap, a shortage of material exists in practically all lines and great difficulty is being experienced in securing sufficient material to meets all requirements of the trade.

New York

Exports of Coke Curtailed and Prices Weaker—Pig Iron Lull Continues

NEW YORK, April 10.—The movement of coke to Germany, Belgium and France amounts to about 5000 tons per day, but is curtailed by the embargo which is stilled maintained against shipment to Philadelphia, where 2000 cars are still unloaded. The embargo is undoubtedly a factor in the weakness which has developed and furnace coke can now be bought as low as $6.75, Connellsville ovens, for high-grade furnace coke, while $8 is the usual price for foundry grades. Coke somewhat high in sulphur is selling at less than $5.

Pig Iron.—The lull in buying which was pronounced last week continues and the only large inquiry pending is from the Worthington Pump & Machinery Corporation, which is in the market for 3365 tons of various grades for delivery at five different plants during the third quarter. The General Electric Co. has bought 1000 tons of high silicon iron, and the Ingersoll-Rand Co. has bought about 600 tons in addition to the 600 announced last week. One railroad equipment company is inquiring for 2500 tons, and another has bought 500 tons for a Western plant. Prices continue unchanged, except that charcoal has been marked up 50c. to $33.50, Michigan furnace, but with a somewhat easier tendency. Labor shortage, which is preventing foundries from increasing their melt, is a factor in causing the hesitation about buying, as is also the rapid increase in production of pig iron, which is regarded by some buyers as an indication that prices may be lower. Buffalo iron is freely quoted for third quarter at $29.50 and the same quotation is made on Virginia iron for that delivery.

We quote delivered in the New York district as follows, having added to furnace prices $2.27 freight from eastern Pennsylvania, $4.91 from Buffalo and $5.44 from Virginia:

East. Pa. No. 1 fdy., sil. 2.75 to 3.25	$34.27 to $35.27
East Pa. No. 2X fdy., sil. 2.25 to 2.75	33.27 to 34.27
East. Pa. No. 2 fdy., sil. 1.75 to 2.25	32.27 to 33.27
Buffalo, sil. 1.75 to 2.25	34.41 to 34.91
No. 2X Virginia, sil. 2.25 to 2.75	34.94
No. 2 Virginia, sil. 1.75 to 2.25	34.44

Ferroalloys.—Sales continue to be made by British producers of ferromanganese for delivery late this year, but the volume is not heavy. The total during the week has probably been 1500 to 2000 tons for shipment during the last half at $115 seaboard. There have also been sales of prompt and early delivery carload lots at $125, but this filling-in demand is not heavy, consumers being pretty well covered for early and near-future requirements. No domestic spiegeleisen is being sold and only a few small lots of the imported product are available, for which most any price around $50, seaboard, can be obtained. There seems, however, to be no particular inquiry before the market and no anxiety as to future needs. A fair demand persists for 50 per cent ferrosilicon, made up of carload and small lots for early delivery, for which $92.50 to $95, delivered, and higher, is reported obtained. The ferrochromium market continues moderately active with quotations for the 4 to 6 per cent carbon alloy at 11.50c. to 12c. per lb. of contained chromium, delivered.

Cast Iron Pipe.—Prices are firm and private and municipal buying continues heavy. Deliveries are from four to five months on all sizes. We quote per net ton, f.o.b. New York, in carload lots, as follows: 6-in. and larger, $58.50; 4-in. and 5-in., $63; 3-in., $68.80, with $4 additional for Class A and gas pipe. The soil pipe market is firm and despite active buying by jobbers, stocks are still low as a result of the heavy demand for building construction. The only possibility there seems to be of any weakness developing is labor shortage and poor deliveries of other materials entering into building construction, which might result in curtailment of operations. We quote discounts on soil pipe of both Southern and Northern makers, delivered New York, as follows: 2-in. to 6-in. standard, 13 to 15¾ per cent off list; 23 to 25¾ per cent off list.

Ore.—The Iron & Ore Corporation of America has just sold 15,000 tons of Caucasian manganese ore for shipment at the rate of 5000 tons per month in July, August and September and the price was 45½c. per unit. The quotation today is 43½c. for ordinary and 45½c. per unit for washed ore. The price of Brazilian seems to be nominal. North African iron ore is 12c. per unit for low phosphorus copper free and 11c. per unit for low phosphorus with a small percentage of copper.

Warehouse Business.—Practically all the warehouses in this district, including the leading independent interest, have increased their quotations on bars, shapes, plates, bands, sheets, etc., in accordance with the present higher mill prices, Pittsburgh. No action is as yet known to have been taken by the Carnegie Steel Co. on its prices for shipment from Waverly warehouse. The new prices are based on a mill quotation of 2.45c. per lb. base, Pittsburgh, with a $15 per ton margin between mill and warehouse. As the former prices were base on 2.25c. per lb., Pittsburgh, the new schedule represents an unusual advance. Mild steel bars, which were 3.34c. per lb., have gone to 3.54c. per lb. with shapes and plates at 3.64c. per lb., base. Hoops are unchanged at 5.19c. per lb., but bands have been raised from 4.14c. to 4.39c. per lb. The base price for No. 10 blue annealed sheets has been increased from 4.34c. per lb. to 4.59c. per lb., an advance of 25c. per 100 lb. While the majority of warehouses have gone to a basis of 5.15c. and 6.15c. per lb. on black and galvanized sheets, at least one warehouse is quoting 5.10c. and 6.10c. per lb. base and a seller, which is somewhat of a factor in the sheet market, is firmly maintaining a basis of 5.50c. and 6.50c. per lb. on black and galvanized respectively. Tire steel is quoted at 3.60c. per lb. for iron finish and 3.80c. for smooth finish, an advance of 25c. per 100 lb., and toe-calk is now 4.60c. per lb., an increase of 30c. per 100 lb. Cold rolled shafting is 4.40c. per lb. for rounds and 4.90c. per lb. for flats, squares and hexagons. Cold rolled strip steel is on a basis of 7.50c. and 9.50c. per lb. Spring steel is unchanged at 4.50c. per lb. base, but an advance is expected shortly, as delayed shipments from the mills are causing many mill customers to turn to the warehouses for their supplies and mills are quoting higher prices. Brass and copper prices are unchanged. Wrought iron and steel pipe warehouses report good business and on some sizes stocks are low. We quote prices on page 1090.

Finished Material.—While pressure from consumers has let up to a considerable extent so far as new business is concerned, there are heavy specifications against contracts, indicating that consumption is well maintained and possibly gaining, it being necessary for the mills to be watchful to prevent over-specifying against contracts. The let-up in new business is doubtless due to a number of causes, among which the advancing prices and the inability of the majority of mills to consider business for early delivery are of foremost importance. Structural steel inquiries continue active, but the projects are of smaller size, a majority running not over 200 or 300 tons, as it is easier to get steel for small jobs than for large ones. The price situation continues to emphasize the distinction between long-time and early deliveries. Large buyers are able to get bars and even shapes at 2.35c. to 2.50c., Pittsburgh, but plates are not so easy to obtain and the smaller mills are having little difficulty in getting 2.65c. to 2.75c., Pittsburgh, when in a position to promise shipment within one or two months.

We quote for mill shipments, New York delivery, as follows: Soft steel bars, 2.69c. to 2.84c.; plates and structural shapes, 2.79c. to 2.84c.; bar iron, 2.84c.

Old Material.—Quotations are generally unchanged from last week, but the market still exhibits some weakness. On heavy melting steel, railroad quality, $24 per ton, delivered Bethlehem, is being paid, but it is reported that on most of the present shipments cuts of $1.50 to $2 per ton are being made because of qual-

ity. For shipment to Conshohocken, Pa., $24 per ton is being paid for No. 1 heavy melting steel and $25.50 per ton is offered for shipment to Monessen. Stove plate is fairly firm at $19 to $19.50 per ton, buying price, New York, shipments going to West Mahwah, N. J., and other New Jersey foundries. Mixed borings and turnings are still quoted at $17.50 per ton, delivered Bethlehem. Specification pipe is fairly firm at $16.75 to $17.25, buying price, New York. On the whole the market is still slightly weak, but with a tendency toward firmness.

Buying prices per gross ton, New York, follow:

Heavy melting steel, yard	$20.00 to $20.50
Steel rails, short lengths, or equivalent	21.00 to 21.50
Rails for rolling	22.00 to 23.00
Relaying rails, nominal	29.00 to 30.00
Steel car axles	25.00 to 26.00
Iron car axles	29.00 to 30.00
No. 1 railroad wrought	22.00 to 23.00
Wrought iron track	22.00 to 22.50
Forge fire	15.50 to 16.00
No. 1 yard wrought, long	19.50 to 20.00
Cast borings (clean)	16.00 to 16.50
Machine-shop turnings	17.00 to 17.50
Mixed borings and turnings	15.00 to 15.50
Iron and steel pipe (1 in. diam., not under 2 ft. long)	16.75 to 17.25
Stove plate	19.00 to 19.50
Locomotive grate bars	20.00 to 21.00
Malleable cast (railroad)	22.00 to 23.00
Cast-iron car wheels	22.00 to 23.00

Prices which dealers in New York and Brooklyn are quoting to local foundries per gross ton follow:

No. 1 machinery cast	$26.00 to $26.50
No. 1 heavy cast (columns, building materials, etc.), cupola size	25.00 to 25.50
No. 1 heavy cast, not cupola size	23.00 to 23.50
No. 2 cast (radiators, cast boilers, etc.)	21.00 to 22.00

Boston

Buffalo and Pennsylvania Furnaces Shaded Prices the Past Week

BOSTON, April 10.—The pig iron market has quieted down considerably and is easier. A shading of prices on iron for third and fourth quarter delivery by Buffalo, and a clipping of differentials by Pennsylvania furnaces suggests the peak in prices on this movement was reached the past week. The three most active Buffalo furnaces in this territory, on an April or spot basis of $31, furnace, for No. 2 plain, have taken business for the remainder of the second quarter at $30, and for third and fourth quarter at $29.50 base. The largest single order for second half was just under 2000 tons of No. 2 plain at $29.50, placed by a heater manufacturer. Small lots of resale Buffalo, third quarter, sold at $29, not enough tonnage, however, to establish a market on that basis. Eastern Pennsylvania iron, heretofore offered at $33, is now obtainable at $32, and iron formerly $32 is now $31.50. Other furnaces continue to quote $31 base. In practically all cases $1 differentials have disappeared except on very high silicon iron, 50c. being the rule. Two lots of Buffalo malleable, one 500 tons for third quarter delivery, and the other 200 tons for fourth quarter, both at $30, furnace base, changed hands the past week. Virginia iron appears firmer, largely because of more limited offerings. Alabama interests, withdrawn from the New England market at $27 base, have turned down tonnages at higher prices.

We quote delivered prices on the basis of the latest reported sales as follows, having added $3.65 freight from eastern Pennsylvania, $4.91 from Buffalo, $5.92 from Virginia, and $9.60 from Alabama:

East. Penn., sil. 2.25 to 2.75	$35.15 to $36.15
East. Penn., sil. 1.75 to 2.25	34.65 to 35.65
Buffalo, sil. 2.25 to 2.75	34.91 to 36.41
Buffalo, sil. 1.75 to 2.25	34.41 to 35.91
Virginia, sil. 2.25 to 2.75	34.92 to 35.92
Virginia, sil. 1.75 to 2.25	34.42 to 35.42
Alabama, sil. 2.25 to 2.75	37.10
Alabama, sil. 1.75 to 2.25	36.60

Coke.—The New England Coal & Coke Co. continues to quote by-product foundry coke at $16, delivered within the $3.10 freight zone, and the Providence Gas Co., $15. The latter company, which up to the past week was practically up to date on shipments, fell behind slightly, due to a mishap at the plant. The New England Coal & Coke Co. continues behind on deliveries, but is doing better in this respect than a month ago. Slightly more interest was shown by foundries the past week in Connellsville foundry cokes, several 100-ton lots reported to have sold at delivered prices slightly under those quoted by New England makers.

Cast Iron Pipe.—The demand for cast iron pipe in this territory continues heavy, especially from municipalities. Pipe makers in most cases are sold up to and including September, and for that reason are not anxious to take on additional tonnages except to old customers. Even in such instances deliveries are not guaranteed on specified dates. Gas pipe makers are almost sold up for the rest of 1923, consequently prospective customers have difficulty in getting specifications accepted. One of the largest Massachusetts gas companies, in putting out feelers the past week for a considerable tonnage, received bids on only one or two sizes out of five or six required. Among the cast iron pipe business placed recently the Warren Foundry & Pipe Co. took 900 tons 12-in. for Pawtucket, R. I.; 300 tons 10-in. and 12-in. for Lewiston, Me., and 400 tons 16-in. for Greenfield, Mass.; the United States Cast Iron Pipe & Foundry Co. took approximately 1200 ft. 24-in. for Andover, Mass., and the Donaldson Iron & Pipe Co. about 100 tons 6-in. and 8-in. for Waltham, Mass. The city of Quincy, Mass., will open bids at 3 p. m., Monday, April 16, on 64 tons 6-in., 105 tons 8-in., 50 tons 10-in. and 40 tons 12-in., a total of 259 tons. Cast iron pipe in car lots, f.o.b. common Boston rate points, is sold as follows: 4-in., $67.10 a ton; 6-in. to 14 in. inclusive, $62.10; 16-in. and up, $61.10. The usual $3 differential applies to class A and gas pipe.

Warehouse Business.—Warehouse prices on soft steel bars, flats, concrete bars, structural steel, steel bands and hoops, plates and refined iron, have advanced $5 a ton. No change is noted in tire, spring, cold rolled and toe calk steel, best refined, Wayne and Norway iron, or in sheets. The movement of iron and steel out of warehouses continues to run well ahead of that for the corresponding period last year.

Jobbers quote: Soft steel bars, $3.61½ per 100 lb.; flats, $4.40; concrete bars, $3.76½ to $3.89; structural angles, channels and beams, $3.71½; tire steel, $4.80 to $5.15; open-hearth spring steel, $8.00 to $10; crucible spring steel, $12; bands, $4.80 to $5.30; hoop steel, $5.80 to $6.30; cold rolled steel, $4.50 to $5.00; toe calk steel, $6.15; refined iron, $3.61½ per 100 lb.; best refined iron, $4.75; Wayne iron, $5.50; Norway iron, $6.60 to $7.10; steel plates, $3.71½ to $3.97½; No. 10 blue annealed sheets, $4.61½ a 100 lb.; No. 28 black sheets, $5.65; No. 28 galvanized, $6.65.

Old Material.—A better feeling prevails in old materials. Dealers are covered on the bulk of contract requirements; owners of material are now less anxious to sell; the market seems to have settled down in anticipation of renewed steel mill buying. Heavy melting steel came out the past week more freely than any other material, mostly at $19 and $19.50 on cars, with occasional sales running as high as $20. Boiler plate, $15 on cars or $19.41 delivered; horseshoes, $18 on cars; cotton ties, $15 to $15.50, an advance of 25c.; pipe, mostly at $16; skeleton, at $15.50 and $16, and $15 in a small way; mixed, as well as steel mill borings and turnings, generally at or about $15.50, figured in the past week's transactions. Cast scrap continues in demand and steady, with $28 delivered the average price on common material, and $29 on strictly textile cast.

The following prices are for gross ton lots delivered consuming points:

No. 1 machinery cast	$28.00 to $28.50
No. 2 machinery cast	26.00 to 26.50
Stove plate	21.00 to 21.50
Railroad malleable	27.00 to 28.00
Street car wheels	26.00 to 26.50

The following prices are offered per gross ton lots f.o.b. Boston rate shipping points:

No. 1 heavy melting steel	$19.00 to $20.00
No. 1 railroad wrought	21.00 to 21.50
No. 1 yard wrought	19.00 to 19.50
Wrought pipe (1 in. in diam., over 2 ft. long)	16.00 to 16.50
Machine shop turnings	15.50 to 16.00
Cast iron borings, rolling mill	15.50 to 16.00
Cast iron borings, chemical	19.00 to 20.00
Blast furnace borings and turnings	15.00 to 15.50
Forged scrap and bundled skeleton	15.50 to 16.00
Shafting	22.00 to 22.50
Street car axles	22.00 to 22.50
Rails for rerolling	21.00 to 21.50

Cincinnati

Limited Sales of Pig Iron—Production Increased in Southern Ohio

CINCINNATI, April 10.—The pig iron market was unusually quiet last week, and total sales hardly exceeded 4000 tons, made up mostly of lots ranging from one car to 200 tons. Included in the tonnages was one lot of 1000 tons of Northern to a Kentucky sanitary manufacturer, and 700 tons of Southern to a western Indiana pipe shop. Most of the sales were of Northern iron for second quarter shipment. Southern furnaces are well sold up for second quarter, have comfortable order books for third quarter, and as a result are not pushing sales for any delivery. Prices are firm at last week's levels, and on small lots of Southern iron for immediate shipment premiums of $1 per ton have been paid. In southern Ohio production has been considerably increased by the addition of two merchant stacks, and it is reported that three more will blow in shortly. Shipments are good, and little of the current make is being piled. It is pretty generally conceded that melters in this district are well covered for second quarter, but little has been done on third quarter requirements, and a buying movement is expected to develop shortly. Indications point to another quiet week, as inquiry is light. The Norfolk & Western Railroad is inquiring for 1200 tons, a Cincinnati pump manufacturer for 1100 tons of various grades, and a Louisville melter for 500 tons for immediate shipment.

Coke.—Domestic coke is active, but furnace and foundry grades are not in heavy demand, as melters are pretty well covered. Prices are off from most districts, although car shortage in Wise County is hampering production and tending to keep prices up. Furnace fuel is said to be freely offered for both prompt and future shipment at considerably lower prices. Connellsville foundry coke is quoted at $8 to $9, and furnace at $6.50 to $7. Prices in other districts remain the same as last week.

Based on freight rates of $4.05 from Birmingham and $2.27 from Ironton, we quote f.o.b. Cincinnati:

Southern coke, sil. 1.75 to 2.25 (base)	$31.05
Southern coke, sil. 2.25 to 2.75 (No. 2 soft)	31.55
Ohio silvery, 8 per cent	41.77
Southern Ohio coke, sil. 1.75 to 2.25 (No. 2)	33.27
Basic Northern	32.27
Malleable	33.27

Structural Material.—No new projects have appeared, and the only letting of importance is 800 tons for the new plant of the Pittsburgh Plate Glass Co. at Zanesville, Ohio. A number of projects will shortly be up, however, including a paper mill at Middletown, Ohio, and the Third National Bank building, Dayton.

Reinforcing Bars.—The market is active, and a number of new projects have appeared. An addition to the Kemper-Thomas factory building at Norwood will require about 350 tons, and a car barn for the Louisville Railway Co. 150 tons. Approximately 100 tons for the Provident Bank Building, Cincinnati, has been awarded to the Truscon Steel Co.

Finished Material.—With consumers pretty well covered for second quarter needs of bars, shapes and plates, interest is centered mostly in lots for quick delivery, of which business there is a lot coming up from time to time. While prices continue to advance, the movement is not so pronounced as has been the case for several weeks, and buyers and sellers are now of the opinion that the peak of prices has been nearly reached. This feeling hardly applies to sheets and wire products, however, as some independent manufacturers of wire have advanced prices $2 per ton, and sheets for early delivery are bringing pretty nearly what is asked. On bars, shapes and plates the market ranges from 2.65c. to 2.75c. for reasonably early delivery, with one Eastern mill quoting plates for three weeks' delivery at 2.80c. mill. Blue annealed sheets are to be had in limited tonnages at 3.25c. to 3.50c, and black at 4.15c. to 4.25c., with one mill asking 4.50c. Galvanized sheets are commonly quoted at 5.25c., and on automobile body sheets it is said some business has been done at 7c. Tin plate for early delivery commands a price of $6 per base box, although it is said that some mills have not gone above $5.25. A better demand for steel is reported from the implement manufacturers, and one plant catering largely to the Southern farmer trade is now running to capacity. A fair average rate of operation for the implement manufacturers in this district is given at 70 per cent, with foreign business making up a fairly large part of business on books. A few inquiries for small tonnages of light rails are current, and it is said that prices will shortly be advanced $3 to $5 per ton.

Warehouse Business.—Local jobbers have advanced prices $2 per ton on all products except black and galvanized sheets, and wire products, which advanced a similar amount a week ago. The demand is very active.

Cincinnati jobbers quote: Iron and steel bars, 3.50c.; reinforcing bars, 3.60c.; hoops, 4.55c.; bands, 4.25c.; shapes, 3.60c.; plates, 3.60c.; cold-rolled rounds, 4.25c.; cold-rolled flats, squares and hexagons, 4.75c.; No. 10 blue annealed sheets, 4.25c.; No. 28 black sheets, 5c.; No. 28 galvanized sheets, 6c.; No. 9 annealed wire, $3.30 to $3.40 per 100 lb.; common wire nails, $3.40 per keg base.

Old Material.—Local scrap dealers report greater activity, particularly to Youngstown and Cleveland districts, where the bulk of the local make is being shipped. Steel mills in this district are out of the market for the time being. Dealers are paying higher prices for shipment to outside points, and we note a sale of iron axles to Pittsburgh territory for which $29 Cincinnati, has been offered. Higher prices are being offered for steel grades, and machinery cast is also higher. Some melters are buying No. 4 iron in lieu of scrap. Railroad offerings are heavy, the B. & O. and Pennsylvania both having big lists out.

We quote dealers' buying prices, f.o.b. cars Cincinnati:

Per Gross Ton	
Bundled sheets	$18.00 to $18.50
Iron rails	20.50 to 21.00
Relaying rails, 50 lb. and up	29.50 to 30.00
Rails for rolling	22.50 to 23.00
Heavy melting steel	22.50 to 23.00
Steel rails for melting	20.50 to 21.00
Car wheels	23.50 to 24.00
Per Net Ton	
No. 1 railroad wrought	18.50 to 19.00
Cast borings	16.00 to 16.50
Steel turnings	15.00 to 15.50
Railroad cast	22.00 to 22.50
No. 1 machinery cast	24.50 to 25.00
Burnt scrap	17.00 to 17.50
Iron axles	28.50 to 29.00
Locomotive tires (smooth inside)	20.00 to 20.50
Pipes and flues	15.50 to 16.00

St. Louis

Buying of Pig Iron Largely of Small Tonnages for Spot Shipment

ST. LOUIS, April 10.—The activity in the pig iron market last week was largely confined to a demand for spot shipments, orders being for a carload up to 200 tons. This demand is from the smaller melters and from some of the larger concerns which need certain grades to fill out tonnages. Only slight interest is being shown in third quarter requirements, a situation agreeable to the makers. Melters are asking that shipments against contracts be rushed and in some cases are asking for shipments ahead of schedules. The order for 5300 tons of various grades from a northern Illinois melter covered by the inquiry reported in last week's IRON AGE went to the Chicago market. The demand for Southern iron from stove makers shows some let-up, sales of a Sheffield producer amouting to only about 600 tons, for water and rail and all rail shipment.

We quote delivered consumers' yards, St. Louis, as follows, having added to furnace prices $2.16 freight from Chicago, $3.28 from Birmingham (rail and water), $5.17 from Birmingham, all rail, and 81 cents average switching charge from Granite City:

Northern fdy., sil. 1.75 to 2.25	$34.16
Northern malleable, sil. 1.75 to 2.25	34.16
Basic	34.16
Southern fdy., sil. 1.75 to 2.25	32.17

Ferroalloys.—There is considerable demand for spiegeleisen and ferromanganese for prompt shipment, with only very limited quantities available. The largest inquiry before the market is for 600 tons of spiegel-

eisen. Other inquiries include 100 tons of spiegeleisen, and 200 tons of ferromanganese.

Finished Iron and Steel.—A considerable falling off in inquiries in all lines is reported by mill representatives. This may be due either to the state of the market or to the fact that buyers realize how far sold up the mills are and regard it as useless to ask for quotations for shipment within a reasonable time, or both reasons. In either event, the mills welcome a breathing spell. The Bethlehem Steel Co. sold 200 tons of charcoal iron boiler tubes to a Western road. Warehouse prices on plates, shapes and bars have advanced 10c. per lb.

For stock out of warehouse we quote: Soft steel bars, 3.35c. per lb.; iron bars, 3.35c.; structural shapes, 3.45c.; tank plates, 3.45c.; No. 10 blue annealed sheets, 4.25c.; No. 28 black sheets, cold rolled, one pass, 5c.; cold drawn rounds, shafting and screw stock, 4.45c.; structural rivets, 4.15c.; boiler rivets, 4.25c.; tank rivets, ⅞ in. and smaller, 50-5 per cent off list; machine bolts, 45-5 per cent; carriage bolts, 40-5 per cent; lag screws, 50-5 per cent; hot pressed nuts, square or hexagon blank, $2.50; and tapped, $2.50 off list.

Coke.—As a result of a slight drop in temperature there has been a better demand for domestic coke. The Granite City by-product concern has been making only domestic grades, and has been unable to stock any because of the heavy demand. The demand for foundry grades is heavy, but the market is easier because of the heavier receipts from Birmingham and the Connellsville district.

Old Material.—Because of a slackening of demand for old material from melters in this district one of the largest dealers in the district sold 14,000 tons of steel scrap for shipment to Eastern plants. This situation will have considerable bearing on the market when the mills here do re-enter the market, which is expected to be within the next 45 to 60 days. Railroad offerings were somewhat heavier. Heavier receipts and lack of buying caused further drop in prices. There is a heavy demand for relaying rails, some of the larger railroads being in the market because of the inability of the steel mills to make shipments.

We quote dealers' prices f.o.b. consumers' works, St. Louis industrial district and dealers' yards, as follows:

	Per Gross Ton	
Iron rails	$22.50 to	$23.00
Rails for rolling	23.00 to	23.50
Steel rails, less than 3 ft.	24.00 to	24.50
Relaying rails, standard section	37.50 to	39.00
Cast iron car wheels	27.50 to	28.00
Heavy melting steel	22.50 to	23.00
Heavy shoveling steel	22.00 to	22.50
Frogs, switches and guards cut apart	22.50 to	23.00
	Per Net Ton	
Heavy axles and tire turnings	16.00 to	16.50
Steel angle bars	21.00 to	21.50
Iron car axles	27.50 to	28.50
Steel car axles	24.00 to	24.50
Wrought iron bars and transoms	25.75 to	26.25
No. 1 railroad wrought	22.25 to	22.75
No. 2 railroad wrought	20.75 to	21.25
Railroad springs	24.00 to	24.50
Steel couplers and knuckles	24.00 to	24.50
Cast iron borings	14.50 to	15.00
No. 1 busheling	18.00 to	18.50
No. 1 railroad cast	24.00 to	24.50
No. 1 machinery cast	24.50 to	25.00
Railroad malleable	23.50 to	24.00
Machine shop turnings	13.50 to	14.00

Detroit Scrap Market

DETROIT, April 10.—The recent Dodge lettings for April delivery established the strength of the present market on old material and dealers predominated in the bidding. The Cleveland and Buffalo districts are absorbing a large proportion of the scrap being shipped out of this district, whereas several months ago the bulk of the tonnage was going to the Valley.

The following prices are quoted on a gross ton basis f.o.b. cars producers' yards, excepting stove plate, automobile and No. 1 machinery cast, which are quoted on a net ton basis.

Heavy melting steel	$23.00 to $24.50
Shoveling steel	23.50 to 24.50
No. 1 machinery cast	27.00 to 28.50
Cast borings	28.00 to 28.50
Automobile cast scrap	29.00 to 32.00
Stove plate	20.00 to 22.00
Hydraulic compressed	20.25 to 21.25
Turnings	17.00 to 18.00
Flashings	18.25 to 19.25

Buffalo

Dullness in Pig Iron Market Continues Without Weakening Prices

BUFFALO, April 10.—The dullness which set in last week is more pronounced and both sales and inquiry have fallen off with all interests. The quietness which started in April applies to all sellers. Prices, howe have not weakened; the situation is just that buyers seem to have satisfied their needs and for the moment are disinterested. No large inquiries are out nor have any exceptional sales been made. The largest individual inquiry engaging attention is for 1000 tons. There is no difficulty in buying No. 2 plain iron at $29.50 for third quarter. One of the largest factors in merchant business has not opened its third quarter books, but is expected to this week. Several carload tonnages of silicon 3.25 to 3.75 have been sold at $35, furnace, but the transaction hardly bears on the market because it was a special requirement. Buyers approached for third quarter needs are inclined to hold off, believing lower prices will be available. March sales totaled about 160,000 tons, which virtually means the major needs of big consumers are covered. Sales of foundry iron calling for May and June delivery have been at $30 and there have been isolated cases of premiums being paid for 30-day delivery. One office has had inquiries for fourth quarter but not sufficiently specific to warrant great interest.

We quote f.o.b. per gross ton Buffalo as follows, the higher price being for early shipment:

No. 1 foundry, 2.75 to 3.25 sil.	$30.50 to $31.00
No. 2X foundry, 2.25 to 2.75 sil.	30.00 to 30.50
No. 2 plain, 1.75 to 2.25 sil.	29.50 to 30.00
Basic	30.00
Malleable	30.00
Lake Superior charcoal	37.28

Finished Iron and Steel.—Only one important factor in the finished material field reports a slackening in demand. The others have not found that the weakening in pig iron demand reflects on the insistence for bars, shapes, plates and other finished products. The lessening of demand felt in one office refers to bar and billet business. Bars now range from 2.35c. to 2.50c. Plates are quoted at 2.45c. and 2.50c. and some small independent mills are quoting as high as 2.80c. on plates. The prevailing shape price is 2.45c. Some agencies are trying to limit their acceptance of business to tonnages they can deliver within 90 days; longer deliveries are discouraged. The leading sheet interest is sold up for second quarter business. Black sheets are firm at 4c. Reinforcing bar demand is keen; a mill which formerly was active in seeking reinforcing bar jobs for specific enterprises is devoting attention to the general field and selling out of stock. The largest finished material producer is expected to make announcement of its ability to take limited tonnages at reasonable delivery on angles, channels and beams.

We quote warehouse prices, Buffalo, as follows: Structural shapes, 3.50c.; plate, 3.50c.; soft steel bars, 3.40c.; hoops, 4.50c.; bands, 4.20c.; blue annealed sheets, No. 10 gage, 4.20c.; galvanized steel sheets, No. 28 gage, 6.10c.; black sheets, No. 28 gage, 5.10c.; cold rolled round shafting, 4.25c.

Coke.—Demand has slackened considerably and difficulties which have hampered delivery appear to have been removed.

Old Material.—The market in old material is softer except for borings and turnings, malleable scrap and low phosphorus. The mills are not showing much interest; their wants have been satisfied for the present and generally they are more concerned with getting deliveries on orders placed than buying. Dealers are busy filling orders placed last month.

Heavy melting steel	$24.50 to $25.00
Low phos., 0.04 and under	28.00 to 29.00
No. 1 railroad wrought	22.00 to 23.00
Car wheels	26.00 to 27.00
Machine shop turnings	18.00 to 19.00
Cast iron borings	19.00 to 20.00
No. 1 busheling	22.50 to 23.00
Heavy steel turnings	23.00 to 23.50
Stove plate	23.00to 24.00
Grate bars	23.00 to 24.00
Bundled sheet stampings	18.00 to 19.00
No. 1 machinery cast	26.00 to 27.00
Hydraulic compressed	22.50 to 23.00
Railroad malleable	27.50 to 28.50

Cleveland

Pig Iron Market Very Quiet—Ore Buying Stops—Scrap Declines

CLEVELAND, April 10.—The fairly heavy buying of iron ore that followed the naming of ore prices has subsided. Many consumers are taking their time in placing orders and some have not yet figured out their requirements. Some furnaces have bought very liberally and others have adopted a conservative policy and have covered only for part of their requirements or in some cases only for enough ore to last them until early fall. For prices see page 1073.

Ore Shipments.—Ore continues to move from Lake Erie docks in heavy volume and the dock balance May 1 will be considerably less than on the same date for several years. Shipments from docks to interior furnaces during March were 1,324,977 gross tons, as compared with 410,627 tons in March last year. The balance on docks April 1 was 6,625,106 tons, as compared with 7,635,696 tons on the same date a year ago. At the present rate of movement, the amount on docks May 1 will be little in excess of 5,000,000 tons. The smallest dock balance on May 1 in the previous six years was in 1917, when there was 4,772,232 tons on the docks on that date. On May 1, 1921, it was 8,093,854 tons.

Pig Iron.—The market has become very quiet and in some quarters there is a slight easing up in the price situation in that one or more producers appear willing to sell iron for the third quarter delivery at slightly lower prices than have prevailed recently. New inquiries are very light and some consumers who came in the market for iron for the third quarter have decided to defer buying. Various factors appear to be affecting the attitude of some producers regarding the price situation. These include the fact that foundries, now operating at 50 to 70 per cent of capacity, have little hope of increasing their melt because of the shortage of molders and common labor, the increased pig iron production and the downward tendency in coal and coke prices. While one Cleveland interest reports sales during the week aggregating 15,000 tons, others booked very little business. Locally, the situation has become very tight owing to the fact that local furnaces now have little iron to ship on contracts and this is expected to result in some demand for spot iron. A western Ohio consumer has purchased 500 tons of Buffalo foundry iron for the second quarter, being unable to place an order with any northern Ohio furnace. Foundry and malleable iron is still generally quoted at $31.50 lake furnace. In the Valley district quotations range from $31 to $31.50. Buffalo iron, which is a factor in this territory, is quoted at $29.50 to $30. Steel making iron is inactive. It has developed that, in addition to sales reported, two Ohio consumers recently purchased round tonnages of basic iron for the third quarter at $31.

Quotations below, except on basic and low phosphorus iron, are delivered Cleveland, and for local iron includes a 50c. switching charge. Ohio silvery and Southern iron prices are based on a $3.02 freight rate from Jackson and $6 rate from Birmingham:

Basic, Valley furnace	$31.00
Northern No. 2 fdy., sil. 1.75 to 2.25	$32.15 to 33.27
Southern fdy., sil. 1.75 to 2.25	33.00
Malleable	32.15 to 33.27
Ohio silvery, 8 per cent	42.52
Standard low phos., Valley furnace	35.00

Bolts, Nuts and Rivets.—Several bolt and nut manufacturers have not yet made a general advance in their prices to the new discounts named a week ago by a few of the makers, but are quoting the old prices to their regular customers for the second quarter. However, for small current orders, some are quoting the higher prices. Rivet orders are heavy and the price situation is unchanged.

Reinforcing Bars.—Soft steel reinforcing bars are now quoted at 2.90c., Pittsburgh warehouse, a $2 advance. Rail steel bars are unchanged at 2.35c. to 2.50c.

Warehouse Business.—Effective April 9, the Carnegie Steel Co. advanced warehouse prices $3 a ton on steel bars, plates, structural material, hoops and bands and blue annealed sheets. Other jobbers as yet have not advanced quotations, but will probably do so.

Jobbers quote steel bars, 3.36c.; plates and structural shapes, 3.46c.; No. 9 galvanized wire, 3.70c.; No. 9 annealed wire, 3.25c.; No. 28 black sheets, 4.75c.; No. 28 galvanized sheets, 5.90c.; No. 10 blue annealed sheets, 3.80c. to 4.06c.; cold rolled rounds, 3.90c.; flats, squares and hexagons, 4.40c.; hoops and bands, 1 in. and wider and 20 gage or heavier, 4.16c.; narrower than 1 in. or lighter than No. 20 gage, 4.60c.

Semi-Finished Steel.—Some activity has developed in forging billets in lots up to 100 tons, on which Eastern mills have quoted $55 to $56, but the orders have been taken by a local producer at reported prices of about $56 to $60, delivered.

Finished Material.—The volume of new inquiries is fairly heavy from consumers who are anxious to get orders on the mill books for steel bars for delivery in the third and fourth quarters. These are being allotted tonnages usually in considerably smaller amounts than they wished to place. One independent mill during the week took 2000 tons of steel bars for the third quarter, subject to prices to be named later. Many consumers are not getting steel as fast as needed. This is particularly true of the agricultural implement manufacturers, who are doing more business than they expected, and are crowding the mills for shipment on orders placed about two months ago. The shortage of steel for early shipment is becoming more acute. Consumers are turning to warehouses for supply. Consequently, warehouse business has increased materially in lots up to 100 tons. On steel bars 2.50c. is the minimum quotation for any reasonable delivery and prices range up to 2.75c. and higher. Plates still show an upward tendency. A local mill is now selling tank plates at 2.85c., Pittsburgh, for delivery in about four weeks. Eastern mills have advanced plates to 2.90c. and 3c. at mill, but these prices are not bringing out orders in this territory. Structural material is quoted at from 2.45c. to 3c., with 2.60c. to 2.75c. the more common range. In structural lines there is a good volume of local business, requiring small lots of steel, but there has been a marked falling off in new projects of any size in Cleveland, although considerable inquiry continues to come from the surrounding territory. In Detroit the Ford Motor Co. has taken bids for 5000 tons for a new steel plant, and the Iron Mountain Land & Lumber Co., a Ford interest, will erect a plant at Iron Mountain, Mich., requiring 2000 tons.

Sheets.—The demand is less active than it has been and one or two mills are looking for orders for black sheets at 3.75c. and galvanized sheets at 5c., or slightly lower prices than have been commonly quoted recently. However, most mills are adhering to 4c. for black sheets, blue annealed sheets are quoted at 3c. for heavy gages and 3.15c. to 3.25c. for the lighter gages. Most mills are sold up on blue annealed sheets.

Coke.—Weak spots have developed in foundry coke, which is quoted at $8 to $9 for standard Connellsville makes. Sales of Virginia foundry coke are reported at $9 for the second quarter.

Old Material.—The market, which began to show a weaker tendency two weeks ago, but was stiffened by a spurt of activity in the Youngstown district, has again taken a slump and prices on heavy melting steel and most other grades have declined 50c. a ton. The market is exceedingly dull, with no buying reported by either Valley or Cleveland materials. Heavy melting steel has sold as low as $24.50, shippers' yard, for delivery to a Cleveland mill, and more is offered at that price.

We quote per gross ton f.o.b. Cleveland as follows:

Heavy melting steel	$24.50 to $25.25
Rails for rolling	28.00 to 28.50
Rails under 3 ft	27.50 to 28.00
Low phosphorus melting	27.50 to 28.00
Cast borings	19.75 to 20.00
Machine shop turnings	19.50 to 19.75
Mixed borings and short turnings	19.50 to 19.75
Compressed sheet steel	23.75 to 24.00
Railroad wrought	22.50 to 23.00
Railroad malleable	28.50 to 29.00
Light bundle sheet stampings	20.00 to 20.50
Steel axle turnings	23.00 to 23.25
No. 1 cast	29.00 to 30.00
No. 1 busheling	19.50 to 19.75
Drop forge flashings	21.75 to 22.00
Railroad grate bars	23.00 to 24.00
Stove plate	23.00 to 24.00
Pipes and flues	21.00 to 21.50

Philadelphia

Lull in Demand for Finished Steel, Pig Iron and Old Material

PHILADELPHIA, April 10.—Compared with the almost feverish buying of the first quarter of the year, the present quiet of the steel, pig iron and old material markets has excited comment. This lull in buying, which was noted in our last week's report, is more in evidence this week, but not much significance is attached to it in view of the heavy obligations which mills and furnaces have on their books. In fact, so far as steel is concerned, the chief difficulty of the mills is to keep contract customers from over specifying. Slight weakness in the Buffalo iron market, coupled with increasing production of iron, have had an effect on the minds of pig iron buyers, but as most furnaces have from two to four months' orders on their books, the pig iron trade is not seriously concerned.

Pig Iron.—The increasing production of pig iron, as shown by the monthly blast furnaces statistics of THE IRON AGE for March, and the fact that more furnaces are being put in blast, together with slight weakness in the Buffalo market, have injected some doubt into the minds of pig iron buyers as to the wisdom of buying now for third quarter, and the result is a marked falling off in the demand for iron. The past week has been exceedingly quiet. Pig iron men declare that the present situation was to have been expected, as the heavy buying of the past month or two could not have kept up indefinitely, especially as consumers are now pretty well covered for second quarter. Many buyers are showing a disposition to hold off on third quarter buying. In view of the increasing production they expect no shortage. Prices are unchanged at $31 for No. 2 plain, $32 for No. 2X, $33 for No. 1X, $32 for malleable, $30 for basic and $30 for gray forge, all f.o.b. eastern Pennsylvania or New Jersey furnace. The Replogle Steel Co. blew its second Wharton furnace on Monday. The Goshen furnace in Virginia will blow in about April 20. Receipts of pig iron from abroad have almost ceased, last week incoming shipments amounting to only 700 tons, all from England.

The following quotations are, with the exception of those on low phosphorus iron, for delivery at Philadelphia and include freight rates varying from 76 cents to $1.64 per gross ton:

East. Pa. No. 2 plain, 1.75 to 2.25 sil.	$32.14 to $32.76
East. Pa. No. 2X, 2.25 to 2.75 sil.	33.14 to 33.76
East. Pa. No. 1X	34.14 to 35.26
Virginia No. 2 plain, 1.75 to 2.25 sil.	33.67 to 34.17
Virginia No. 2X, 2.25 to 2.75 sil.	34.67 to 35.17
Basic delivered eastern Pa.	31.00 to 31.50
Gray forge	31.00 to 31.50
Malleable	33.14 to 33.64
Standard low phos. (f.o.b. furnace), nominal	35.00
Copper bearing low phos. (f.o.b. furnace)	33.00

Foreign Pig Iron

All prices f.o.b. cars Philadelphia, duty paid.

Continental foundry, 1.80 to 2.50 sil.	$31.00
Continental foundry, 2.50 to 3 sil.	32.00
Low phos., copper free, guar. not over 0.035 per cent phos.	35.36
Continental, phos. 1.50; sil. 2 to 3	31.50

Ore.—Large lots of manganese ore have been purchased within the past week. An Eastern steel company took a large tonnage of Brazilian ore and a ferromanganese producer also bought. Brazilian ore is quoted at 40c. to 42c. per unit, according to quality, and washed Caucasian ore at 43c. per unit.

Ferroalloys.—There is a serious shortage of spiegeleisen for early delivery and those having stocks are able to get $50 or more a ton for carload lots. Ferromanganese is available for prompt shipment at $125, seaboard or furnace, and for the remainder of first half at $120, while the contract price for third quarter for domestic is $115, furnace.

Semi-Finished Steel.—Forging steel is becoming scarcer and higher in price. One Eastern mill quotes $55, Pittsburgh, while on open-hearth rerolling billets quotations range from $45 to $47.50, Pittsburgh.

Plates.—Eastern plate mills have again advanced their prices. One that was quoting 2.75c., Pittsburgh, has gone to 2.85c., while others which were quoting 2.65c., Pittsburgh, now name 2.75c. as their minimum. For shipment to points West as high as 3c., Eastern mill, has been obtained on small lots. The Pennsylvania Railroad is in the market for upward of 3000 tons of car plates and a smaller tonnage of shapes.

Structural Shapes.—Two Eastern independent mills now quote 2.85c., mill, for structural shapes. The leading interest which quotes 2.45c., Pittsburgh, for indefinite delivery is also quoting 3c. at its Eastern mill for early deliveries. The demand for steel for building work in Philadelphia, while not as heavy as it was several weeks ago, is still active.

Bars.—While the nominal quotation of some mills for steel bars is 2.35c. to 2.50c., Pittsburgh, it is impossible to obtain bars for early shipment at these figures and consumers have paid 2.75c. and higher for carloads that could be shipped within the next month or two. Bar iron is still quoted at 2.50c., Pittsburgh, for carloads and at 2.80c. for less than carloads.

Sheets.—The leading Eastern maker of blue annealed sheets now quotes 3.25c., Pittsburgh, as its minimum.

Warehouse Business.—Local steel jobbers have advanced prices for steel products out of stock from $4 to $5 a ton. We quote for local delivery the new prices as follows:

Soft steel bars and small shapes, 3.55c.; iron bars (except bands), 3.55c.; round edge iron, 3.75c.; round edge steel, iron finish, 1½ x ½ in., 3.75c.; round edge steel planished, 4.55c.; tank steel plates, ¼ in. and heavier, 3.65c.; tank steel plates, ⅜ in., 3.95c.; blue annealed steel sheets, No. 10 gage, 4.25c.; black sheets, No. 28 gage, 5.15c.; galvanized sheets, No. 28 gage, 6.25c.; square twisted and deformed steel bars, 3.65c.; structural shapes, 3.65c.; diamond pattern plates, ¼-in., 5.40c.; ⅜-in., 5.60c.; spring steel, 5c.; round cold-rolled steel, 4.35c.; squares and hexagons, cold-rolled steel, 4.85c.; steel hoops, 1 in. and wider, No. 20 gage and heavier, 4.75c.; narrower than 1 in., all gages, 5.25c.; steel bands, No. 12 gage to ⅜-in., inclusive, 4.35c.; rails, 3.55c.; tool steel, 8.50c.; Norway iron, 7c.

Old Material.—Further declines in prices of various grades of old material have occurred during the week, the reductions ranging from 50c. to $1 a ton. The volume of business being done is very light. A cargo of 4100 tons of scrap was received at this port last week from Cuba.

We quote for delivery at consuming points in this district as follows:

No. 1 heavy melting steel	$24.00 to $25.00
Scrap rails	24.00 to 25.00
Steel rails for rolling	26.00 to 27.00
No. 1 low phos., heavy 0.04 and under	30.00 to 32.00
Cast iron car wheels	27.00 to 28.00
No. 1 railroad wrought	27.00 to 28.00
No. 1 yard wrought	25.00 to 26.00
No. 1 forge fire	21.00 to 22.00
Bundled sheets (for steel works)	20.00 to 21.00
No. 1 busheling	24.00 to 25.00
Mixed borings and turnings for blast furnace use	17.50 to 18.50
Machine shop turnings (for steel works use)	20.00 to 21.00
Machine shop turnings (for rolling mill use)	21.00 to 22.00
Heavy axle turnings (or equivalent)	22.50 to 23.50
Cast borings (for steel works and rolling mills)	20.00 to 21.00
Cast borings (for chemical plants)	25.00 to 26.00
No. 1 cast	27.00 to 28.00
Heavy breakable cast (for steel plants)	24.50 to 25.50
Railroad grate bars	22.00 to 23.00
Stove plate (for steel plant use)	21.00 to 22.00
Railroad malleable	24.00 to 26.00
Wrought iron and soft steel pipes and tubes (new specifications)	21.00 to 22.00
Shafting	27.50 to 28.50
Steel axles	28.00 to 30.00

Ford Motor Co. Will Build Steel Plant at Detroit

CLEVELAND, April 10.—The Ford Motor Co., Detroit, will erect a steel plant at its River Rouge plant. It is understood that this will include an open-hearth plant, blooming mill, bar mill and strip mill. The construction of this plant will be the carrying out of the company's original plans to make both pig iron and steel for its own requirements. Bids have been taken for the buildings, which will require 5000 tons of steel.

San Francisco

Very Little Buying of Pig Iron—Complaint as to Quality of Some Tonnage

SAN FRANCISCO, April 4.—There has been very little business in the market for pig iron during the last two weeks, in fact, for some weeks past. As the prices steadily hardened, the volume of business has diminished and during the last week there was almost no trading. This situation is strangely in contrast with local industrial activity. Fundamentally both the iron and steel trades are in good shape and the only deterrent element appears to be the high cost of material. Under normal conditions large quantities of European iron, largely from Belgium, are used on this coast, chiefly because it is cheaper than English and Scotch, but since the French occupation of the Ruhr valley, and the diversion of that product into other channels, it became necessary to use the English and Scotch iron. Some of the local importers were sufficiently far-sighted to visualize the present condition and bought considerable quantities ahead, and while there is an abundance on hand, the prices are firmly held at advanced figures. On the pig iron recently sold and now selling the price range was $38 to $38.50 per ton. The tonnage arriving has been considerably above normal and for the time being stocks on hand are in excess of requirements. The high prices have turned attention of buyers to some lower grade iron, which is offering in small lots, among which is a certain percentage of the recent importations, some of it being little better than scrap. Again, some of this iron was sold in transit, and upon arrival was rejected by the purchasers because analysis showed it was not up to contract standard.

Coke.—There have been no recent sales of English coke and there is no demand for future delivery, owing to the high prices prevailing. The f.o.b. price has advanced tremendously and this, coupled with the high rate of exchange, makes the selling rate prohibitive. Buyers are now obliged to pay $23 to $24.50 per ton, ex-ship. The importers of coke did the same thing in their line as the importers of pig iron, that is, bought largely ahead. Prices on domestic coke are also high. Desirable grades of West Virginia readily bring $14 to $15 per ton. Connellsville is held at from $12.50 to $15 and Georgia about $14.50. The by-product from the Alabama district is being offered at $12 to $12.50 per ton, but the quantities are small. Holders are not making any special efforts to sell, although supplies on hand are considered liberal, estimates varying from 3000 to 3500 tons of the imported.

Finished Iron and Steel.—Comparatively speaking, there is very little, if any, change in the market conditions. While quotable prices remain about the same as two weeks ago, there is a noticeable hardening which will undoubtedly result in higher figures. The demand shows some increase, more particularly in railroad equipment material. Several large office and hotel buildings are now being planned wherein steel construction will be fully utilized, but plans are not yet ready for figuring. Of these new structures five are in Los Angeles, four in San Francisco, two in Oakland and three in Oregon. While the California climate permits construction practically the entire year, it is nevertheless a fact that the first three months of the year are usually less active in this line, because of inclemency of weather. Dealers report a substantial increase in the demand for the several grades of steel wire for reinforcement in concrete work, and for some of the heavier grades the price is slightly higher and strong.

Old Material.—Prices remain unchanged and the demand is of moderate volume. While an extra desirable round lot might bring as high as $15.50, that would be a top figure. Unlike the Eastern iron and steel centers, where so many diversified uses in manufacturing industries admit of grading old material, the scrap on this coast is all put in together and the quotations are therefore confined within very narrow range. The price $13.50 to $15 may be said to be strong, but there is an ample supply available for all present requirements, and it is very doubtful whether any further increase in price will be announced. Cast iron scrap remains firm with moderate offerings, and the price unchanged.

Birmingham

Southern Market Held at $27 as Pig Iron Base —Labor More Efficient

BIRMINGHAM, ALA., April 10.—Birmingham pig iron rested during the first week of April with only one maker in the open market. This one booked 3000 tons in lots from 100 to 500 tons for prompt and remainder of second quarter delivery. A maker out of the market booked 2000 tons for third quarter delivery for a Southern pipe maker. The leading interest may be considered out of the market, being oversold on its foundry capacity, and soon due to need more iron for its own purposes. The Sloss-Sheffield Steel & Iron Co. will have a sixth stack going by the middle of the month. All business has been on a base of $27 so far as makers are concerned. Sales above that figure, if made, have been third party transactions. Greater labor efficiency is helping produce new high records in mine, mill and pipe shop, the Tennessee company making 17 new all-time high ones in March. All makers seem steadfast in determination to hold the market at the present base. One maker is averaging $25 on all iron being now delivered. Melters failing of delivery on iron ordered of the leading interest have filled with others for current needs and will benefit by the lower price on the delayed iron when it is delivered. Outside of the new Sloss-Sheffield Coal & Iron Co.'s stack, there seems no chance of increasing production. Transportation service, everything considered, is very good and no plant operations have slowed down on account of scarcity of cars. Charcoal iron is strong and some lots have brought $35. Production and consumption are on an even keel and markets are not nervous.

We quote per gross ton f.o.b. Birmingham district furnaces as follows:

Foundry, silicon 1.75 to 2.25	$27.00
Basic	26.00
Charcoal, warm blast	34.00

Finishing Mills.—The Tennessee company broke all records in rail, ingot and other steel mills in March. Double turn continues the vogue. Bars are quoted f.o.b. Birmingham at 2.60c. to 2.70c. Hoops and bands are in demand causing double turn. China and Buenos Aires have taken small tonnages. All steel plants are straining to produce maximum output.

Coal and Coke.—Coal production reached a new high mark in the week ending March 31 owing to furnace and railroad demand with 416,000 tons compared with best prior production of 402,000 tons week ending March 3. Spot coke is very scarce, and easily brings $9 and $10. Victory coke of the Barrett Co. made of pitch brings several dollars higher than other cokes. Hamburg took 1000 tons of coke via Mobile last week.

Cast Iron Pipe.—The United States Cast Iron Pipe & Foundry Co. has booked 1100 tons of 6 to 16-in. for Memphis and 5000 tons for Fort Smith, Ark. On April 9 base on 6-in. and upward went to $49. Gas pipe differential was extended April 1 from $3 to $5. Sanitary pipe remains at $75. Both pipe markets are very strong.

Old Material.—The scrap market steadied at the recent advances and has been active, especially in No. 1 cast, which brings the higher quotation oftener than the lower one. Freight rates confine the local yard territory.

We quote per gross ton f.o.b. Birmingham district yards as follows:

Old steel rails	$18.00 to $20.00
No. 1 steel	16.00 to 18.00
No. 1 cast	21.00 to 23.00
Car wheels	21.00 to 23.00
Tramcar wheels	20.00 to 22.00
Stove plate	18.00 to 19.00
Cast iron borings	12.00 to 13.00
Machine shop turnings	12.00 to 13.00

British Iron and Steel Market

Prompt Iron Unobtainable—American Coke Eases Situation—Continental Blast Furnaces Being Re-Started

(By Cable)

LONDON, ENGLAND, April 10.

Pig iron is strong and unaltered in price. There are some small supplies of material offered for early delivery, but prompt iron is unobtainable. Cleveland makers as yet are disinclined to quote beyond June. Export coke is easier, on account of sales of American coke to the Continent, but home prices are firm.

Hematite is firm, makers being fully sold to the end of May. Foreign ore is quiet, with consumers well covered. Sellers of Bilbao-Rubio ask 25s. to 25½s. ($5.82 to $5.94) ex-ship Tees.

Finished iron and steel is quiet. There is good Continental demand, but buyers generally are not keen to close.

Continental position is unchanged. Small, odd parcels are offered by Belgium, but prices are non-competitive. Belgian bar iron is offered at £9 15s. (2.03c. per lb.), f.o.b. French wire rods are held at £12 ($55.92), f.o.b.

In France the Société Anonyme des Forges et Acieries du Nord et de l'Est has blown in a furnace at Valenciennes. Coke supplies are improving, as the Lorraine strike is over.

In Hungary the Rimamurany-Salgotarjaner Eisenwerks expects shortly to blow in a third furnace. Germany has placed important orders in Hungarian plants.

In Austria the Oesterreich Alpine Montangesellschaft is resuming at Seltweg on German orders.

Tin plate is steady but quiet. Overseas buyers are hesitating to pay the enhanced prices. Tin plate bars are being talked of again at higher prices.

Galvanized sheets are dearer on increasing costs, but sales generally are only moderate. Buyers are not keen to pay the prices asked and the works are well sold up for two or three months.

Black sheets are dearer, but the demand is quieter. Far Eastern buying has ceased. In other markets small sales have been recorded.

We quote per gross ton, except where otherwise stated, f.o.b makers' works, with American equivalent figured at $4.66 per £1, as follows:

Durham coke, delivered	£2	2½s.	to	£2	5s.	$9.90	to	$10.48
Cleveland No. 1 foundry	6	10†				30.29		
Cleveland No. 3 foundry	6	5				29.12		
Cleveland No. 4 foundry	6	5				29.12		
Cleveland No. 4 forge	6	2½				28.54		
Cleveland basic	6	2½				28.54		
East Coast mixed	6	5	to	6	10	29.12	to	30.29
Ferromanganese	16	0				74.56		
Ferromanganese*	17	0				79.22		
Rails, 60 lb. and up	10	0	to	10	10	46.60	to	48.93
Billets	9	10	to	10	0	44.27	to	46.60
Sheet and tin plate bars, Welsh	10	0				46.60		
Tin plates, base box	1	5	to	1	6	5.82	to	6.06
						C. per Lb.		
Ship plates	10	5	to	10	15	2.13	to	2.24
Boiler plates	12	10	to	13	0	2.60	to	2.70
Tees	11	0	to	11	10	2.29	to	2.39
Channels	10	5	to	10	15	2.13	to	2.24
Beams	10	0	to	10	10	2.08	to	2.18
Round bars, ¾ to 3 in.	11	0	to	11	10	2.29	to	2.39
Galvanized sheets, 24 g.	19	10	to	20	0	4.06		
Black sheets, 24 gage	14	10	to	14	15	3.01		
Black sheets, Japanese specifications	15	5				3.17		
Steel hoops	11	0	&	13	0*	2.29	&	2.70*
Cold rolled steel strip, 20 g.	23	0				4.78		
Cotton ties, Indian specifications	15	0				3.12		

*Export price. †Nominal.

Increasing Cost of Raw Materials Retards Expansion—Large Buying by the Continent

LONDON, ENGLAND, March 22.—The iron and steel trades continue to enjoy a little boom, orders from the continent, in particular, being large. There are signs, however, of a weakening in the buying from other quarters, the colonies in particular being shy of the continually advancing prices.

Pig iron markets are very fully sold, mainly for export, and although one or two more furnaces have been started, the increasing costs of raw materials prevent any general expansion. Some of the northeast coke makers have sold their output up to June, and while the home price for ordinary blast furnace material is about 40s., as much as 82s. 6d. has been paid by continental buyers. How long this will last, of course, depends entirely upon the duration of the dislocation in the Ruhr. The current Cleveland quotations for No. 3 G. M. B. are about 127s. 6d. to 130s., but there is no iron obtainable for prompt and very little even for April deliveries. A good business has been moving in hematite and the price is about 25s. upward according to grade.

Further advances have been declared in finished iron and steel prices, but even these do not check the enthusiasm of continental buyers, and during the past week some heavy orders for shipbuilding material have been booked on German account. These orders are probably to supplement the small supplies which the German works have in hand at the present time, so as to avoid repudiating their contracts with their overseas purchasers, particularly South America. Belgium has also been a good buyer, while some sales have been made with Luxemburg. France has shown considerable interest in annealed sheets, and some good quantities have been booked. The demand for thin close annealed sheets for Japan has been phenomenal, and works are fully sold out for four to five months ahead, and have obtained very high figures. At the moment this demand shows signs of waning, but little effect will be felt owing to the full order books. The ever-increasing cost in raw materials is affecting the tin plate market, tin plate bar makers having just declared an advance of 24s. The minimum price of tinplates is 22s. 6d. basis, but there are very few sellers at even 24s., some, in fact, asking up to 26s. Galvanized sheets have not enjoyed so much of a boom, but the works have been going along steadily, taking moderate orders, and are comfortably placed for the next two or three months. Within the last few days, however, there has been some considerable revival of demand from India, and good orders have been placed.

A recent contract secured by Messrs. Sir W. G. Armstrong Whitworth has been one for the building of a motor liner of 17,000 tons gross for the Swedish-American line. This vessel will ply between Gothenburg and New York, and will have accommodation for 1600 passengers.

Low Stocks in Alabama Yards

BIRMINGHAM, ALA., April 10.—Stocks in Alabama furnace yards March 1 and April 1 were as follows: Foundry, 36,000 and 28,000 tons; machine cast, 1500 and 1600 tons; warrants, 400 and 600 tons; basic, 12,000 and 9000 tons; totals, 50,000 and 40,000 tons. The total marks a new low record. Only one concern has as much as 5000 tons.

Orders are nearly double the volume of a year ago, states President W. H. Foster of the General Fireproofing Co., Youngstown. Directors have declared a dividend of $1.50 per share on the common stock for the first quarter, payable April 1 to stock of record March 20. This dividend rate is unchanged from the previous quarter.

Dr. Enrique Touceda, Albany, N. Y., consulting engineer of the American Malleable Castings Association, delivered an address on "Malleable Cast Iron" before a joint meeting of the Tri-City Chapter of the American Society for Steel Treating and the Quad-City Foundrymen's Association, held at the Chamber of Commerce, Davenport, Iowa, on March 15.

Prices Finished Iron and Steel f.o.b. Pittsburgh

For additional prices, see page 1073

Plates

Sheared, tank quality, base, per lb.....2.45c. to 2.75c.

Structural Material

Beams, channels, etc.....2.45c. to 2.60c.
Sheet piling .....2.60c. to 2.75c.

Iron and Steel Bars

Soft steel bars, base, per lb.....2.35c. to 2.75c.
Refined iron bars, base, per lb.....3.25c.
Double refined iron bars, base per lb.....4.85c. to 5.00c.
Stay bolt iron bars, base per lb.....8.00c. to 8.50c.

Hot-Rolled Flats

Hoops, ordinary gages and widths, base, per lb..3.30c. to 3.50c.
Hoops, light gage, under 1 in. wide.....3.50c. to 3.75c.
Bands, base, per lb.....3.30c. to 3.50c.
Strips, base, per lb.....3.25c. to 3.50c.

Cold-Finished Steels

Bars and shafting, base, per lb.....3.00c. to 3.10c.
Strips, base, per lb..... 5.25c.

Wire Products

Nails, base, per keg.....$2.90 to $3.10
Galvanized nails, 1 in. and over.....$2.25 over base
Galvanized nails, less than 1 in.....$2.50 over base
Bright plain wire, base, No. 9 gage per 100 lb..$2.65 to $3.00
Annealed fence wire, base, per 100 lb..... 2.80 to 3.20
Spring wire, base, per 100 lb..... 3.60
Galvanized wire, No. 9, base, per 100 lb..... 3.25 to 3.60
Galvanized barbed, base, per 100 lb..... 3.70 to 3.90
Galvanized staples, base, per keg..... 3.70 to 3.90
Painted barbed wire, base, per 100 lb..... 3.35 to 3.45
Polished staples, base, per keg..... 3.35 to 3.45
Cement coated nails, base, per count keg..... 2.60 to 2.75
Woven fence, carloads (to jobbers) 67½ to 66½ per cent off list
Woven fence, carloads (to retailers)..65 to 64 per cent off list

Bolts and Nuts

Machine bolts, small, rolled threads.....50 per cent off list
Machine bolts, small, cut threads....40 and 10 per cent off list
Machine bolts, larger and longer....40 and 10 per cent off list
Carriage bolts, ⅜ x 6 in.:
Smaller and shorter, rolled threads.....45 per cent off list
Cut threads .....40 per cent off list
Longer and larger sizes.....40 per cent off list
Lag bolts .....50 per cent off list
Plow bolts, Nos. 1, 2 and 3 heads....40 and 10 per cent off list
Other style heads .....20 per cent extra
Machine bolts, c.p.c. and t. nuts, ⅜ x 4 in.:
Smaller and shorter .....35 and 5 per cent off list
Larger and longer sizes.....35 and 5 per cent off list
Hot pressed square or hex. nuts, blank.....$3.00 off list
Hot pressed nuts, tapped..... 2.75 off list
C.p.c. and t. square or hex. nuts, blank..... 3.00 off list
C.p.c. and t. square or hex. nuts, tapped..... 2.75 off list
Semi-finished hex. nuts:
⅞ in. and smaller, U. S. S.....75 and 5 per cent off list
⅝ in. and larger, U. S. S.....70 and 2½ per cent off list
Small sizes, S. A. E.....75, 10 and 5 per cent off list
S. A. E., ⅝ in. and larger....75, 10 and 2½ per cent off list
Stove bolts in packages.....75, 10 and 5 per cent off list
Stove bolts in bulk.....75, 10, 5 and 2½ per cent off list
Tire bolts .....50, 10 and 10 per cent off list

Cap and Set Screws

Milled square and hex. head cap screws,
70 and 10 per cent off list
Milled set screws.....70 and 10 per cent off list
Upset cap screws.....75 per cent off list
Upset set screws.....75 per cent off list

Rivets

Large structural and ship rivets, base, per 100 lb. .....$3.25 to $3.50
Large boiler rivets, base, per 100 lb..... 3.35 to 3.60
Small rivets .....60 and 10 to 60 and 5 off list

Track Equipment

Spikes, ⅜ in. and larger, base, per 100 lb..... $3.15
Spikes, ½ in., ⅝ in. and ¾ in., per 100 lb..... 3.75
Spikes, ⅞ in..... 3.75
Spikes, boat and barge, base, per 100 lb..... 3.50
Track bolts, ¾ in. and larger, base, per 100 lb..$4.00 to 4.50
Track bolts, ½ in. and ⅝ in., base, per 100 lb.. 5.00 to 5.50
Tie plates, per 100 lb..... 2.55 to 2.60
Angle bars, base, per 100 lb..... 2.75

Welded Pipe

Butt Weld

Steel			Iron		
Inches	Black	Galv.	Inches	Black	Galv.
⅛	47	21½	¼ to ⅜.....	+11	+39
¼ to ⅜.....	53	27½	½	22	2
½	58	44½	¾	28	11
¾	62	50½	1 to 1½.....	30	13
1 to 3.....	64	52½			

Lap Weld

2	57	45½	2	23	7
2½ to 6.....	61	49½	2½	26	11
7 to 8.....	58	45½	3 to 6.....	28	13
9 to 12.....	57	44½	7 to 12.....	26	11

Butt Weld, extra strong, plain ends

⅛	43	26½	¼ to ⅜.....+19		+54
¼ to ⅜.....	49	32	½	21	7
½	55	44½	¾	28	12
¾	60	49½	1 to 1½.....	30	14
1 to 1½.....	62	51½			
2 to 3.....	63	52			

Lap Weld, extra strong, plain ends

2	55	44½	2	23	8
2½ to 4.....	59	48½	2½ to 4.....	29	15
4½ to 6.....	58	47½	4½ to 6.....	28	14
7 to 8.....	54	41½	7 to 8.....	21	7
9 to 12.....	48	35½	9 to 12.....	16	2

To the large jobbing trade the above discounts are increased by one point, with supplementary discount of 5 per cent, on black and 1½ points, with a supplementary discount of 5 per cent, on galvanized.

Boiler Tubes

Lap Welded Steel

1¾ in.	21½
2 to 2¼ in.	33
2½ to 3 in.	44
3¼ to 13 in.	49

Charcoal Iron

1½ in. .....+12	
1¾ to 1⅞ in. .....+ 2	
2 to 2¼ in. .....— 8	
2½ to 3 in. .....—13	
3¼ to 4½ in. .....—15	

To large buyers of steel tubes a supplementary discount of 5 per cent is allowed.

Standard Commercial Seamless Boiler Tubes

Discounts on cold-drawn tubes in carload lots, f.o.b. Pittsburgh, follow:

1 in.	55	2½ and 2¾ in.	35
1¼ and 1½ in.	47	3 in.	39
1¾ in.	31	3½ to 4 in.	44
2 and 2¼ in.	31	4¼ in. and 5 in.	36

Hot Rolled

3 in.	41	3¼ to 4 in.	46

Less carloads, 4 points less. Add $8 per net ton for more than four gages heavier than standard. No extras for lengths up to and including 24 ft. Sizes smaller than 1 in. and lighter than standard gage to be sold at mechanical tube list and discount. Intermediate sizes and gages not listed take price of net larger outside diameter and heavier gage.

Seamless Mechanical Tubing

Carbon under 0.30, base.....85 per cent off list
Carbon 0.30 to 0.40, base.....83 per cent off list
Plus usual differentials and extras for cutting.

Seamless Locomotive and Superheater Tubes

Cents per Ft.		Cents per Ft.	
2-in. O.D. 12 gage.....	14	2¼-in. O.D. 10 gage...	19
2-in. O.D. 11 gage.....	15	3-in. O.D. 7 gage...	34
2-in. O.D. 10 gage.....	16	1½-in. O.D. 9 gage...	13¾
2¼-in. O.D. 12 gage...	16	5⅝-in. O.D. 9 gage...	53
2¼-in. O.D. 11 gage...	17	5½-in. O.D. 9 gage...	55

Tin Plate

Standard cokes, per base box.....$4.95 to $6.00

Terne Plate

(Per package, 20 x 28 in.)

8-lb. coating, per 100 lb. base .....$ 9.90		20-lb. coating I. C.....$13.80	
8-lb. coating I. C.....	10.20	25-lb. coating I. C.....	15.10
12-lb. coating I. C.....	11.60	30-lb. coating I. C.....	16.25
15-lb. coating I. C.....	17.70	35-lb. coating I. C.....	17.25
		40-lb. coating I. C.....	18.25

Sheets

Blue Annealed

Nos. 9 and 10 (base), per lb.....2.65c. to 3.25c.

Box Annealed, One Pass Cold Rolled

No. 28 (base), per lb.....3.50c. to 4.00c.

Automobile Sheets

Regular auto body sheets, base (22 gage), per lb. 5.00c. to 6.50c.

Galvanized

No. 28 (base), per lb.....5.00c. to 5.50c.

Long Ternes

No. 28 gage (base), 8-lb. coating, per lb.....4.95c.

Tin-Mill Black Plate

No. 28 (base), per lb.....3.50c. to 4.00c.

Manufacturers have pamphlets, which can be had upon application, giving price differentials for gage and extras for length, width, shearing, etc.

Freight Rates

All rail freight rates from Pittsburgh on finished iron and steel products, in carload lots, to points named, per 100 lb., are as follows:

Philadelphia, domestic.	$0.32	Buffalo	$0.26	St. Louis.....	$0.43
Philadelphia, export..	0.235	Cleveland	0.21	Kansas City	0.735
Baltimore, domestic...	0.31	Cleveland, Youngstown Comb.	0.19	Kansas City (pipe)...	0.705
Baltimore, export.....	0.225	Detroit	0.29	St. Paul	0.60
New York, domestic...	0.34	Cincinnati	0.29	Omaha	0.735
New York, export.....	0.255	Indianapolis	0.31	Omaha (pipe)	0.705
Boston, domestic.....	0.365	Chicago	0.34	Denver	1.27
Boston, export.....	0.255			Denver (pipe)	1.215

Pacific Coast $1.50	
Pac. Coast, ship plates	1.20
Birmingham	0.69
Memphis	0.385
Jacksonville, all rail..	0.50
Jacksonville, rail and water	0.415
New Orleans	0.515

The minimum carload to most of the foregoing points is 36,000 lb. To Denver the minimum loading is 40,000 lb., while to the Pacific Coast on all iron and steel products, except structural material, the minimum is 80,000 lb. On the latter item the rate applies to a minimum of 50,000 lb., and there is an extra charge of 9c. per 100 lb. on carloads of a minimum of 40,000 lb. On shipments of wrought iron and steel pipe to Kansas City, St. Paul, Omaha and Denver the minimum carload is 46,000 lb. On iron and steel items not noted above the rates vary somewhat and are given in detail in the regular railroad tariffs.

Rates from Atlantic Coast ports (i.e., New York, Philadelphia and Baltimore) to Pacific Coast ports of call on most steamship lines, via the Panama Canal, are as follows: Pig iron, 30c. to 40c.; ship plates, 30c. to 40c.; ingot and muck bars, structural steel, common wire products, including cut or wire nails, spikes, and wire hoops, 30c. to 40c.; sheets and tin plates, 30c. to 40c.; rods, wire rope cable and strands, 75c.; wire fencing, netting and stretcher, 49c.; pipes not over 8 in. in diameter, 50c.; over 8 in. in diameter, 2½c. per in. or fraction thereof additional. All prices per 100 lb. in carload lots, minimum 40,000 lb

Prices of Raw Materials, Semi-Finished and Finished Products

Ores

Lake Superior Ores, Delivered Lower Lake Ports

Old range Bessemer, 55 per cent iron	$6.45
Old range non-Bessemer, 51½ per cent iron	5.70
Mesabi Bessemer, 55 per cent iron	6.20
Mesabi non-Bessemer, 51½ per cent iron	5.55

Foreign Ore, per Unit, c.i.f. Philadelphia or Baltimore

Iron ore, low phos., copper free, 55 to 58 per cent iron in dry Spanish or Algerian	12c.
Iron ore, Swedish, average 66 per cent iron	9.5c. to 10c.
Manganese ore, washed, 51 per cent manganese, from the Caucasus	45½c.
Manganese ore, ordinary, 48 per cent manganese, from the Caucasus	43½c.
Manganese ore, Brazilian or Indian	45c.
Tungsten ore, per unit, in 60 per cent concentrates	$7.50 to $8.50
Chrome ore, basic, 48 per cent Cr_2O_3, crude per ton, c.i.f. Atlantic seaboard	18.00 to 28.00
Molybdenum ore, 85 per cent concentrates, per lb. of MoS_2, New York	60c. to 70c.

Ferroalloys

Ferromanganese, domestic, 80 per cent, furnace, per ton	$115.00 to $125.00
Ferromanganese, British, 80 per cent, f.o.b. Atlantic port, duty paid	115.00 to 125.00
Spiegeleisen, foreign, 19 to 21 per cent, seaboard, per ton	45.00 to 55.00
Spiegeleisen, domestic, 16 to 19 per cent, furnace, per ton, nominal	39.00
Ferrosilicon, 50 per cent, delivered per gross ton	92.50 to 95.00
Ferrosilicon, Bessemer, 10 per cent, per ton, furnace	48.50
Ferrosilicon, Bessemer, 11 per cent, per ton, furnace	51.80
Ferrosilicon, Bessemer, 12 per cent, per ton, furnace	55.10
Ferrosilicon, Bessemer, 13 per cent, per ton, furnace	59.10
Ferrosilicon, Bessemer, 14 per cent, per ton, furnace	64.10
Silvery iron, 6 per cent, per ton, furnace	37.00
Silvery, iron, 7 per cent, per ton, furnace	38.00
Silvery iron, 8 per cent, per ton, furnace	39.50
Silvery iron, 9 per cent, per ton, furnace	41.50
Silvery iron, 10 per cent, per ton, furnace	43.50
Silvery iron, 11 per cent, per ton, furnace	46.80
Silvery iron, 12 per cent, per ton, furnace	50.10
Ferrotungsten, per lb. contained metal	90c. to 95c.
Ferrochromium, 4 to 8 per cent carbon, 60 to 70 per cent Cr. per lb. contained Cr. delivered	11.50c. to 12c.
Ferrovanadium, per lb. contained vanadium	$3.50 to $4.00
Ferrocarbontitanium, 15 to 18 per cent, per net ton	200.00

Fluxes and Refractories

Fluorspar, 80 per cent and over calcium fluoride, not over 5 per cent silica per net ton f.o.b. Illinois and Kentucky mines	$20.00
Fluorspar, 85 per cent and over calcium fluoride, not over 5 per cent silica per net ton, f.o.b. Illinois and Kentucky mines	21.50

Per 1000 f.o.b. works:

Fire Clay:	High Duty	Moderate Duty
Pennsylvania	$48.00 to $51.00	$43.00 to $46.00
Ohio	45.00 to 47.00	40.00 to 43.00
Kentucky	45.00 to 47.00	42.00 to 45.00
Illinois	48.00 to 50.00	45.00 to 47.00
Missouri	48.00 to 50.00	38.00 to 43.00
Ground fire clay, per net ton		6.50 to 9.50
Silica Brick:		
Pennsylvania		47.00
Chicago		52.00
Birmingham		48.00
Ground silica clay, per net ton		10.00
Magnesite Brick:		
Standard size, per net ton (f.o.b. Baltimore and Chester, Pa.)		65.00
Grain magnesite, per net ton (f.o.b. Baltimore and Chester, Pa.)		40.00
Chrome Brick:		
Standard size, per net ton		50.00

Semi-Finished Steel, f.o.b. Pittsburgh or Youngstown, per gross ton

Rolling billets, 4-in. and over	$45.00
Rolling billets, 2-in. and under	$45.00 to 47.50
Forging billets, ordinary carbons	52.00 to 55.00
Sheet bars, Bessemer	45.00
Sheet bars, open-hearth	42.50 to 47.50
Slabs	45.00 to 47.50
Wire rods, common, soft base, No. 5 to ¼-in.	49.00 to 55.00
Wire rods, common, soft, case, coarser than ¼-in.	$2.50 over base
Wire rods, screw stock	$5 per ton over base
Wire rods, carbon 0.20 to 0.40	$3 per ton over base
Wire rods, carbon 0.41 to 0.55	$5 per ton over base
Wire rods, carbon 0.56 to 0.75	$7.50 per ton over base
Wire rods, carbon over 0.75	$10 per ton over base
Wire rods, acid	$15 per ton over base
Skelp, grooved, per lb	2.35c. to 2.80c.
Skelp, sheared, per lb	2.35c. to 2.80c.
Skelp, universal, per lb	2.35c. to 2.80c.

Finished Iron and Steel, f.o.b. Mill

Rails, heavy, per gross ton	$43.00
Rails, light, new steel, base, per lb	2.25c.
Rails, light, rerolled, base, per lb	2.25c.
Spikes, $\frac{7}{16}$-in. and larger, base, per 100 lb	$3.15
Spikes, ½-in., $\frac{7}{16}$-in. and $\frac{3}{8}$-in., base, per 100 lb	$3.25 to 3.75
Spikes, $\frac{5}{16}$-in., base, per 100 lb	3.25 to 3.75
Spikes, boat and barge, base, per 100 lb	3.50
Track bolts, $\frac{5}{8}$-in. and smaller, base, per 100 lb	4.25 to 5.50
Track bolts, ¾-in. and larger, base, per 100 lb	4.15 to 4.50
Tie plates, per 100 lb	2.55 to 2.60
Angle bars, per 100 lb	2.75
Bars, common iron, base, per lb	2.50c. to 2.60c.
Bars, rail, steel reinforcing, base, per lb	2.15c. to 2.25c.
Ground shafting, base, per lb	3.40c.
Cut nails, base, per keg	$3.40

Alloy Steel

S.A.E. Series Numbers	Bars 100 lb.
2100 (½% Nickel, 10 to 20 per cent Carbon)	$3.50 to $375
2300 (3½% Nickel)	5.50 to 5.75
2500 (5% Nickel)	8.00 to 8.25
3100 (Nickel Chromium)	4.50 to 4.75
3200 (Nickel Chromium)	6.25 to 6.50
3300 (Nickel Chromium)	8.50 to 8.75
3400 (Nickel Chromium)	7.50 to 7.75
5100 (Chromium Steel)	4.00 to 4.25
5200 (Chromium Steel)	7.50 to 8.50
6100 (Chromium Vanadium bars)	5.25 to 5.50
6100 (Chromium Vanadium spring steel)	5.00 to 5.25
9250 (Silico Manganese spring steel)	4.00 to 4.25
Nickel Chrome Vanadium (0.60 Nickel, 0.50 Chromium, 0.15 Vanadium)	5.25
Chromium Molybdenum bars (0.70-1 Chromium, 0.25—0.40 Molybdenum)	5.00 to 5.25
Chromium Molybdenum spring steel (0.50—0.70 Chromium, 0.15—0.25 Molybdenum)	4.75 to 5.00

Above prices are for hot-rolled alloy steel bars, forging quality, per 100-lb. f.o.b. Pittsburgh. Billets 4 x 4 in. and larger are $10 per gross ton less than net ton price for bars of same analyses. On smaller than 4 x 4-in. billets down to and including 2½-in. sq. there is a size extra of $10 per gross ton; on billets smaller than 2½-in. sq. the net ton bar price applies.

Five fellowships for research in mining, metallurgy, and ceramics have been offered by the College of Mines, University of Washington, Seattle, Wash., in cooperative work with the Bureau of Mines. The fellowships holders pay the usual tuition and laboratory fees, register as graduate students and become candidates for the degrees of master of science. The value of each fellowship is $810 for twelve months beginning July 1. Applications should be made to Milnor Roberts, College of Mines, University of Washington.

The United Engineering & Foundry Co., Pittsburgh, is building for the Weirton Steel Co., Weirton, W. Va., a complement of sheet mills arranged in two trains, each train driven by a 1200-hp. motor. Each motor drives four finishing mills, two roughers and two cold mills. The housings are cast steel, weighing about 35,000 lb. each. The company built a group of sheet mills for the National Enameling & Stamping Co., consisting of six finishing stands, six roughing stands, two cold mills, as well as one finishing stand jobbing mill driven by a 2000-hp. motor.

NON-FERROUS METALS

The Week's Prices

Cents per Pound for Early Delivery

	Copper, New York		Straits Tin	Lead		Zinc	
April	Lake	Electrolytic*	New York	New York	St. Louis	New York	St. Louis
4.....	17.37½	17.12½	46.75	8.50	8.20	8.00	7.65
5.....	17.37½	17.00	46.62½	8.50	8.20	7.95	7.60
6.....	17.37½	17.00	47.00	8.50	8.15	7.85	7.50
7.....	17.37½	17.00	....	8.50	8.15	7.80	7.45
9.....	17.37½	17.00	46.50	8.40	8.15	7.70	7.35
10.....	17.37½	17.00	46.50	8.40	8.15	7.80	7.45

*Refinery quotation; delivered price ¼c. higher.

New York

NEW YORK, April 10.

The markets are all quiet and there have been some recessions in prices. Buying of copper is light and the market is easier. The tin market has been exceedingly dull and prices are lower. Lead is in moderate demand but prices have declined slightly. Recessions in the zinc market have been sharper, but there has been a firming tendency the past few days.

Copper.—With practically all large consumers covered for the first half, at least, there has been a natural slackening in buying and the market continues quite inactive. The demand that has appeared has been satisfied by one or two producers and by most dealers at a shade under the price which has prevailed until the past week or so. The business that has been done has gone at 17.25c., delivered, and it has been possible in one or two rare cases to shade this slightly. There are some producers, however, who refuse to sell at less than 17.37½c., delivered. The electrolytic copper market is therefore quotable at a range of 17.25c. to 17.37½c., delivered. It is understood that deliveries into consumption for March will fall only a little short of the record since the war, which was about 225,000,000 lb. It is also stated that in March more metal was melted by brass makers than at any time in the history of the country, the war included. These are strong indications of the state of general business in the nonferrous industry. The Lake copper market is also quiet at 17.37½c., delivered.

Tin.—The Straits tin market has been exceedingly dull and uninteresting during the week covered by this report. Transactions have been exceedingly light and on only one day was there any activity worth speaking about. This was on April 5, when total sales amounted to 200 to 225 tons. On the same day about 125 tons of 99 per cent Chinese tin was sold on the New York Metal Exchange at 44.50c. for spot and futures. Today the market has been also moderately active with sales of 250 tons reported, and with the quotations of spot Straits at 46.50c., New York, duty paid. Arrivals thus far this month have been 1390 tons, with 9123 tons reported afloat.

Lead.—This market is quiet and fairly steady. By some sellers it is called very firm, but there are signs of the appearance of an easing tendency. Prices are slightly lower than a week ago, although the quotation of the leading interest is unchanged at 8.25c., New York. This seller is evidently taking very little business for April, but is booking for May at the price mentioned. In the outside market sales were made for New York delivery as high as 8.50c. a few days ago, but yesterday and today the price was a little lower at about 8.40c., New York, which we quote as the market. The St. Louis price of the independents is 8.15c. to 8.20c., for early delivery.

Zinc.—Because of very light demand and lower prices in London the market for prime Western has been declining until late yesterday. Today it turned quite firm and advanced about 10 points from the low on this movement. There was also a fair business transacted today at 7.45c., St. Louis, or 7.80c., New York, for prompt and April shipment. The market is considerably stronger than yesterday and prices are higher in London and sellers are generally optimistic. High grade zinc of the electrolytic brand has sold as high as 8.87½c.

Nickel.—Shot and ingot nickel are unchanged at 29c. to 32c., with electrolytic nickel held at 32c., according to the quotations of the leading producers. In the outside spot market shot and ingot nickel are quoted at 29c. to 32c.

Antimony.—Wholesale lots of Chinese metal for early delivery are quoted at 8.50c. to 8.65c. per lb., New York, duty paid.

Aluminum.—For early delivery virgin metal, 98 to 99 per cent pure, in wholesale lots as imported from foreign producers, is quoted at 26.50c. per lb., New York, duty paid. The leading producer still continues to make no quotations.

Old Material.—Business is very slow and values are slightly lower. Dealers' selling prices are as follows:

	Cents Per Lb.
Copper, heavy and crucible	16.50
Copper, heavy and wire	15.25
Copper, light and bottoms	13.00
Heavy machine composition	13.00
Brass, heavy	10.50
Brass, light	7.50
No. 1 red brass or composition turnings	12.00
No. 1 yellow red brass turnings	9.00
Lead, heavy	7.75
Lead, tea	6.00
Zinc	5.25

Chicago

April 10.—The market is exceedingly quiet and further declines have been registered in tin, lead and zinc. It is apparent that the recent advance in the metals was overdone and that a reaction is now taking place. We quote, in carload lots, lake copper, 17.50c.; tin, 48c.; lead, 8.25c.; spelter, 7.45c.; antimony, 10.50c., in less than carload lots. On old metals we quote copper wire, crucible shapes and copper clips, 14c.; copper bottoms, 12.25c.; red brass, 11.75c.; yellow brass, 8.75c.; lead pipe, 6.50c.; zinc, 5c.; pewter, No. 1, 29c.; tin foil, 33c.; block tin, 38c., all buying prices for less than carload lots.

Increase in Corporation's Unfilled Orders

The United States Steel Corporation on March 31 had 7,405,332 tons of unfilled business on its books, or 119,343 tons more than reported for Feb. 28, and the largest amounts since January, 1921, when unfilled tonnage stood at 7,573,164 tons. The net change in the corporation's tonnage last month compares with one of 373,213 tons in February over January. The Jan. 31 figures showed an increase of 165,073 tons, the Dec. 31 a decrease of 94,539 tons, the Nov. 30 a decrease of 62,045 tons, the Oct. 31 a decrease of 173,944 tons, previous to which there were increases each month as far back as February, 1922. A year ago the unfilled tonnage was 4,494,148 tons, or 2,911,184 tons less than it was March 31. The unfilled tonnage reported by months since January, 1920, follows:

	1923	1922	1921	1920
Jan. 31.....	6,910,776	4,241,678	7,573,164	9,285,441
Feb. 28.....	7,283,989	4,141,069	6,933,867	9,502,081
March 31.....	7,405,332	4,494,148	6,284,765	9,892,075
April 30.....	.....	5,096,913	5,845,224	10,359,747
May 31.....	.....	5,254,228	5,482,487	10,940,465
June 30.....	.....	5,635,531	5,117,868	10,978,817
July 31.....	.....	5,776,161	4,830,324	11,118,468
Aug. 31.....	.....	5,950,105	4,531,926	10,805,038
Sept. 30.....	.....	6,691,607	4,560,670	10,374,804
Oct. 31.....	.....	6,902,287	4,286,829	9,836,852
Nov. 30.....	.....	6,840,242	4,250,542	9,021,481
Dec. 31.....	.....	6,745,703	4,268,414	8,148,122

The largest total of unfilled orders was on April 30, 1917, when it was 12,183,083 tons. The lowest was on Dec. 31, 1910, at 2,605,747.

For the construction of a reclaiming rolling mill at Kent, Ohio, to reroll scrap rods, bars and other scrap materials, the Erie Railroad has appropriated about $35,000. The Kent shops of the Erie are operated by the Youngstown Equipment Co., an affiliated concern of the Youngstown Steel Car Co.

PERSONAL

Carl C. Joys, Jr., has resigned as district sales manager in charge of the eastern district and export business of the Steel & Tube Co. of America, with headquarters in New York, to accept the position of vice-president and to have general charge of domestic business in the United States of the Lucey Mfg. Corporation, with which he was associated as district sales manager at Pittsburgh for seven years prior to March, 1919. Mr. Joys was educated at the University of Wisconsin and, after leaving college in 1908, had extensive experience in California oil fields in the employ of the Consolidated Oil Co. The Lucey Mfg. Corporation is engaged in manufacturing and distributing oil well drilling equipment, with main offices in New York. Mr. Joys has just returned from a trip to Texas and reports that business conditions in the South are highly prosperous.

CARL C. JOYS, JR.

Lon P. Sutter, for the past four years Pittsburgh district sales manager Steel & Tube Co. of America, has been appointed New York district sales manager for the company, succeeding Carl C. Joys, Jr., resigned. Mr. Sutter has been for 12 years with the company and the Mark Mfg. Co., Chicago, which was consolidated with the Iroquois Iron Co. in 1918 to form the Steel & Tube Co. of America. He was located at Toledo for eight years prior to his appointment as Pittsburgh district sales manager. While in the Toledo office he traveled extensively in Ohio, Indiana and Michigan. For the present Mr. Sutter also will continue in charge of the Pittsburgh office of the company.

LON P. SUTTER

G. J. Ecker, who has been connected with the Detroit Gear & Machine Co., Detroit, for the past 12 years, has resigned his position as factory manager.

James J. Zimmerman, formerly assistant superintendent of the Scott Foundry of the Reading Iron Co., in Reading, Pa., and until recently in the foundry department of the Elliott Co., Jeannette, Pa., has assumed charge of a new department of planning and expedition.

Harry Ross Jones, formerly president of the United Alloy Steel Corporation, Canton, Ohio, has returned from a three months' trip to the Mediterranean countries.

W. H. Marshall, chairman of directors of the Consolidated Machine Tool Corporation, 17 East Forty-second Street, New York, has been elected president, succeeding the late C. K. Lassiter.

Floyd G. Crumley has been appointed general superintendent of the Whitaker-Glessner works of the Wheeling Steel Co. at Portsmouth, Ohio. A. E. Cunliffe and B. P. Wheeler have been appointed assistant general superintendents. All three have been in the employ of the company for a number of years. The appointments became effective April 1.

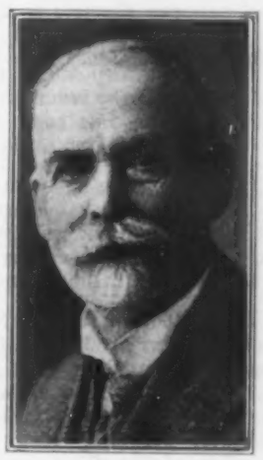
H. W. Bishop, Jr., has been advanced to general sales manager of the Harrisburg Pipe & Pipe Bending Co., Harrisburg, Pa.

C. Tracy Ryan, formerly deputy commissioner of the Tidewater Coal Exchange at New York, and recently associated with Dexter & Carpenter at the New York and Boston offices, is now affiliated with the New York office of the Iron Trade Products Co.

George Brainard has resigned as general manager of the Hydraulic Steel Co., Cleveland, to become general superintendent of the general fireproofing Co., Youngstown, Ohio. The executive duties at the Hydraulic plant, which have been handled by Mr. Brainard, have been divided between James H. Foster, president of the company, who is now also general manager, and F. D. Reynolds, formerly factory manager, who has become general superintendent.

William H. Armstrong, president Armstrong Foundry Co., Racine, Wis., was elected mayor of Racine on April 3. He served as mayor for several terms prior to 1920.

Frank O. Wells, of the F. O. Wells Co., Greenfield, Mass., is president and chairman of directors of the Wells Corporation, Greenfield, recently formed by the consolidation of three tool industries, including the Wells company, the American Tap & Die Co. and the Williamsburg Mfg. Co. Mr. Wells is a pioneer in the tap and die industry, having begun 49 years ago as a workman in the plant of Wiley & Russell, Greenfield. During the World War he was placed on the National Screw Thread Commission which was sent to Europe to negotiate for a standard screw thread. In 1912 he took a leading part in organizing the Greenfield Tap & Die Corporation, of which he was president until his resignation in 1919. He is a charter member of the National Screw Thread Commission.



FRANK O. WELLS

W. H. Allen, manager of the Chicago office, Kearney & Trecker Corporation, since 1918, has been advanced to sales manager, with headquarters at Milwaukee. Previous to his association with the corporation he spent nine years with the Charles H. Besley Co., Chicago, in the capacity of salesman, and latterly was connected with the Fellows Gear Shaper Co., Springfield, Mass., as Chicago sales representative. Following graduation from Beloit College, Beloit, Wis., he served the usual period as shop apprentice and later worked for a time as toolmaker for the Berlin Machine Works, then as testing and erecting engineer with Fairbanks, Morse & Co., Beloit.

Henry Dreses, who recently retired as president of the Dreses Machine Tool Co., Cincinnati, after 43 years connection with the machine tool industry in that city, was tendered a complimentary dinner at the Business Men's Club on April 4 by the radial drilling manufacturers of Cincinnati. Testimonials of the great esteem in which Mr. Dreses was held among the radial drill builders of the country generally were given by the guests. A. H. Tuechter, president Cincinnati Bickford Tool Co., who presided as toastmaster, on behalf of the other manufacturers, presented Mr. Dreses with an elaborate piece of Rookwood pottery. Those present were the following: J. B. Doan, American Tool Works Co.; J. C. Carlton, Carlton Machine Tool Co.; Oscar W. Mueller, Mueller Machine Tool Co.; Norman B. Chace, Fosdick Machine Tool Co.; George McC. Morris and Arthur C. Pletz,

Morris Machine Tool Co.; William Gilbert, Charles Gilbert and Walter Hudson, Dreses Machine Tool Co.; George P. Gradolf and August H. Tuechter, Cincinnati Bickford Tool Co.

Charles J. Brown, who has been assistant general superintendent of the Donora, Pa., steel works, American Steel & Wire Co., has been appointed general superintendent of the Shoenberger works of that company at Pittsburgh. He succeeds John F. Lewis, who has resigned, to become general superintendent of the Lakeside Works of the Otis Steel Co., Cleveland. Mr. Brown's successor at Donora is A. F. White, who has been superintendent of the open hearth department at that works. W. T. Conlin, who has been superintendent of the open hearth department at the Shoenberger works, has been appointed to the place vacated by Mr. White. Frank Williams is the new superintendent of the open hearth department at the Shoenberger works. These several changes were effective April 1.

Frank D. Egan, formerly electrical engineer of the Pittsburgh Crucible Steel Co., later superintendent of the Pittsburgh Iron & Steel Foundries Co., Midland, Pa., and more recently with the Westinghouse Electric & Mfg. Co., has resigned from the latter to become electrical engineer at the Lackawanna works of the Bethlehem Steel Co.

J. H. Klinck, who has been identified with the Westinghouse Electric & Mfg. Co. in different capacities since 1904, has been appointed assistant supervisor of production.

C. A. Hill, who recently returned from an extended trip to Europe, has been appointed chief engineer of the Ulster Iron Works, Dover, N. J.

I. P. Thompson has returned to the Pittsfield, Mass., works of the General Electric Co. as assistant to the works manager. He was graduated from Pennsylvania State College, and for some years was circulation manager of THE IRON AGE.

H. L. Mode, until recently electrical engineer in the chief engineer's office of the Otis Elevator Co., has become associated with the Hoist & Crane Engineering Co., 114 Liberty Street, New York, to have charge of sales. He was at one time with the General Electric Co., later becoming New York district sales representative of the Chesapeake Iron Works, Baltimore, Md., and afterward joining the Champion Engineering Co. in its Toledo office.

H. E. Witham has been appointed manager of the Chicago office of the Kearney & Trecker Corp., where he takes charge at once. He obtained his first contact with the machine tool business with the Warner & Swasey Co. at Cleveland, with which he became associated immediately after leaving high school. He served in various capacities, principally with the sales department, and eventually was placed in charge of the Chicago office. He remained in this capacity for about seven years, after which he moved to Denver, where he has lived during the past year.

Milton H. Pettit, vice-president in charge of production and a director of the J. I. Case Threshing Machine Co., Racine, Wis., has been elected vice-president of the Simmons Co., New York. He has been connected with the Case company for 21 years and vice-president since 1915. He will assume his new duties as operating executive on April 15, and will also be a director and member of the executive committee. James C. Ferris, vice-president Simmons Co., in charge of the Kenosha plant, was promoted on April 1 to general manager of the central division, with headquarters in Chicago.

Fred A. Eisele has been appointed general auditor and assistant secretary of the Laclede Steel Co., which has plants at Madison, Alton and East St. Louis, Ill. He succeeds H. F. Kay, and will have headquarters in the Arcade Building, St. Louis.

J. P. Barnum, recently assistant sales agent and for many years manager of the New York office of the Union Drawn Steel Co., Beaver Falls, Pa., has been appointed eastern sales agent, in charge of the New York office and warehouse, succeeding Louis W. Williams, resigned.

Robert Schweppe has been appointed superintendent of the Garrison plant, Mackintosh-Hemphill Co., Pittsburgh, succeeding J. R. Williams, who resigned recently.

J. H. Frederick, formerly with the Cambria-Westmoreland Coal & Coke Co., Greensburg, Pa., has become associated with Frederick D. Dimmick, Franklin Bank Building, Philadelphia, exclusive agent in Philadelphia and New York for the Sloss-Sheffield Steel & Iron Co. He will have charge of coal and coke sales.

Fred C. Stiening has resigned as chief engineer of the Thomas Spacing Machine Co., Pittsburgh, effective March 31.

R. T. Gordon, who for the past eight years has been connected with the Alberger Pump & Condenser Co., has resigned to accept a position in the sales department of Dean Brothers Co., Indianapolis, manufacturer of pumping machinery. He will be located at the company's New York office, 141 Broadway.

Oscar Olson, who has been connected with the Columbia Steel Co., Elyria, Ohio, for the past 20 years, has resigned to become vice-president and general manager of the newly organized Detroit Steel Corporation, Detroit.

Birger F. Burman has resigned as chief engineer of the New England Oil Refining Co. Formerly he was for several years with the Atlantic Refining Co. and with the Jones & Laughlin Steel Corp. at Pittsburgh.

Henry J. Fuller has resigned as a director of Fairbanks, Morse & Co., Chicago, owing to business pressure, and is succeeded by Melvin A. Traylor. Charles A. Meyer, assistant secretary of the company, was also made a director.

Robert F. Eissler, who during the past two years has ably filled the position of assistant to the vice-president, Chicago Pneumatic Tool Co., New York, being desirous of doing more active sales work, has at his own request assumed his former position as district manager at Pittsburgh. Nelson B. Gatch has been appointed assistant to the vice-president, New York, succeeding Mr. Eissler. William C. Straub has been appointed district manager at New York, to succeed Mr. Gatch, promoted.

Peter J. F. Batenburg, for three years chief engineer and designer of the Mitchell Motors Co., Inc., Racine, Wis., has resigned. He was formerly for 11 years chief engineer of the F W D Auto Co., Clintonville, Wis., coming to America from large engineering plants in France and Italy.

A. C. Dinkey, former president of the Midvale Steel & Ordnance Co., and now president of the new Midvale Co., has assumed his new duties at the general offices of the company at the Nicetown works, Philadelphia. Mr. Dinkey announces the appointment of Stuart Hazelwood as vice-president in charge of sales of the Midvale Co. and of Ward A. Miller as sales agent in New York. Mr. Hazelwood was assistant general manager of sales of the Midvale Steel & Ordnance Co. in charge of the forging sales division and Mr. Miller for the past two years was district sales agent for Midvale in Chicago and for years before that was in the general sales offices of the company in Philadelphia. Other appointments of the Midvale Co. and the location of sales offices will be announced later.

Harry Guilbert, in charge of safety work for the Pullman Co., will discuss safety in the foundry before the Chicago Foundrymen's Club at the City Club, Chicago, Saturday evening, April 14. Mr. Guilbert is in charge of safety at all of the foundries of his company, including that of the former Haskell & Barker Car Co. at Michigan City, Ind.

OBITUARY

WINSLOW BLANCHARD, president Blanchard Machine Co., Cambridge, Mass., who was one of the most widely known machine tool builders in the country, died at his home in Waban, Mass., on April 7, following an illness of several months. Mr. Blanchard was born at Dorchester, a suburb of Boston, the son of John W. and Harriet Blanchard, in 1865. He was graduated from the Massachusetts Institute of Technology in the class of 1888, and shortly became a member of the engineering staff of the Boston Heating Co., Boston, as well as the Metropolitan Storage Commission. For the past 20 years he had been associated with the company of which he was president at the time of his death. Mr. Blanchard was active in trade association work, having served as chief executive of the Boston branch of the National Metal Trades Association, of which he was an honorary member at the time of his death, and as treasurer of the Associated Industries of Massachusetts, in addition to being first vice-president of the National Machine Tool Builders' Association. He was a governor of the Massachusetts Charitable Mechanics Association and a member of the Engineers' Club of Boston and the Machinery Club of New York. He is survived by his widow, two sons, Charles M. of Newton, Mass., and Frederick C. of Detroit, and one sister.

CHARLES A. MAHER, Cleveland, first vice-president National Car Wheel Co., died on April 6, aged 51 years, following several months' confinement to his home. After graduating from Georgetown University he became associated with his father, Thomas Maher, in the Maher Wheel & Foundry Co., Cleveland, and when that company was merged with the National Car Wheel Co. in 1903 he became its first vice-president. He was a director of the Steel Car Co., Euclid, Ohio, and of the Illinois Car & Equipment Co., and was affiliated with other companies engaged in making railroad equipment. Mr. Maher was a member of the Cleveland Chamber of Commerce and of several Cleveland clubs, including the Union Club.

A. LINCOLN PRYOR, purchasing agent Kearney & Trecker Corporation, milling machines, Milwaukee, died on March 19 after a brief illness, aged 60 years. He was born in Milwaukee and was associated with the Kearney & Trecker company since its inception in 1898. Mr. Pryor was secretary-treasurer of the vocational board of education, West Allis, and vice-president of the Milwaukee Association of Purchasing Agents.

JOHN N. ROBINS, a pioneer in dry dock and ship repairing and founder of the John N. Robins Co., Brooklyn, N. Y., died in his seventy-seventh year at Greenwich, Conn., on March 25.

JAMES P. DAVIS, assistant to J. A. Caughey, head of the order department of the National Tube Co., Pittsburgh, died at his home in Duquesne, Pa., on March 14, following an illness of about two weeks. He had been identified with the National Tube Co. for 34 years. He was born in East McKeesport, Pa., 49 years ago, but had resided in Duquesne for many years and was a member of the borough council before Duquesne became a city.

FREDERICK S. MARTIN, staff superintendent Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., died at the West Penn Hospital, Pittsburgh, on April 1. He was born at Claverick, N. Y., 60 years ago, and was graduated from Stanstead Wesleyan College, Quebec, in 1878. He learned the machinist's trade with the Franklin Foundry & Machine Co., Providence, and entered the employ of the R. D. Nuttal Co., Pittsburgh, in 1906, later joining the Westinghouse company in the capacity of superintendent of the industrial motor division from 1907 until 1918, when he was made staff superintendent. He was a member of the American Society of Mechanical Engineers.

THADDEUS E. STEVENS, foreman of brass foundry, General Electric Co., West Lynn, Mass., died at his home in Cliftondale, Mass., on April 4. He was born in Lubec, Me., in 1851, and had been head of the General Electric Co. foundry for 33 years.

FRANCIS L. BULLARD, Wellesley Hills, Mass., died on April 2 in his 87th year. For many years he was associated with the manufacture of locomotives. Mr. Bullard was treasurer of the Hinckley Locomotive Works for a long period, with headquarters in Boston. Subsequently he held a similar position with the Rhode Island Locomotive Works, with offices at Providence.

VALENTINE JANSON, treasurer Janson Steel & Iron Co., Columbia, Pa., died at his home on March 30, aged 65 years. He had been associated for many years in the iron business with his brother, Frank Janson, who died six weeks ago. He is survived by another brother, Joseph Janson, president of the company.

THOMAS C. DE ROSSET, eastern sales manager for the T. H. Symington Co., with offices in Baltimore, died suddenly on April 7 while playing golf at a country club near Baltimore. Death was due to heart trouble. He is survived by his wife and three daughters.

CHARLES F. PIERCE, general auditor Republic Iron & Steel Co., Youngstown, Ohio, died in Albuquerque, N. M., on April 7. He was born in Elizabeth, Ind., and was graduated from Missouri State College. He had been with Republic Iron & Steel Co. since its organization in 1900.

ERNEST MILLS, vice-president and superintendent of Smith & Mills Co., manufacturers of shapers, Cincinnati, died at his home in that city on April 4, aged 49 years His health had been failing for several months. Mr. Mills had been connected with the machine tool industry his entire life, starting as a boy in the shop and working his way up to part ownership in the Smith & Mills Co. He had been prominent in Masonic and other fraternal societies. He is survived by his widow and three children, besides his brother, James E. Mills, president Smith & Mills Co.

W. T. WILLIAMS, superintendent Truscon Steel Co., Detroit, was killed in an automobile accident on April 2, near Ann Arbor, Mich. H. H. Butler, of the Welding Sales & Electric Co., Detroit, was severely but not dangerously injured at the same time.

HENRY B. LEWIS, president Lewis-Hall Iron Works, Detroit, and organizer and director in two other Detroit manufacturing concerns, died suddenly at his home, 724 McDougall Avenue, on April 6, following an attack of kidney disorder. Mr. Hall was 56 years old. He was one of the organizers of the Whitehead & Lewis Iron Co., and later formed the Lewis-Hall Co. He was also vice-president of the Lewis-Hall Motors Corporation and vice-president of the Sterling Gear & Parts Co.

WATSON R. SMITH, manager Hi-Power Tool Co., Jackson, Mich., died at his home on April 6. He was formerly identified with the Reynolds Spring Co. in an executive capacity

PATRICK E. EAGAN, formerly superintendent of construction of the Lackawanna Steel Co., died suddenly at his home, 179 Lafayette Avenue, Buffalo, on April 8, aged 67. Mr. Eagan entered the iron industry as an apprentice in the mills of the old Lackawanna Steel & Iron Co. at Scranton, Pa., in 1873. In 1901, when Lackawanna was moved to Buffalo, he was placed in charge of construction. He retired from active work about eight years ago. He is survived by one son and five daughters.

A bulletin on oil shale, describing the occurrence of oil shales, their oil content and the problems to be solved in their treatment on a commercial scale, has been published by the Bureau of Mines, Department of the Interior. Its author is Martin J. Gavin. Copies can be obtained from the U. S. Bureau of Mines, Boulder, Colo.

STEEL AND INDUSTRIAL STOCKS

Trading Generally Sluggish, But the Prevailing Sentiment Is Not Without Optimism

It is still apparent that a certain strength underlies the market in steel and industrial stocks, but a superficial observation over the past week would show much nervousness and irregularity. Things moved slowly at the outset, but before midweek Steel advanced to 107, and several other issues, including Republic, Gulf States Steel and Crucible, made addative changes. Then a cessation of bullish activity was witnessed and a period of sluggishness followed. In the revival Bethlehem common came into prominence with a 4-point gain to 68, echoing the news that the final step had been taken in absorbing the Midvale properties. Midvale Steel & Ordnance gained 2 points on Wednesday, supposedly in sympathy with the new Midvale stocks which moved up 4 points. Industrials were prominent. Following an effort to rally near the close, many issues were forced to yield under vigorous pressure. Closing business was colorless. Crucible gives evidences of being accumulated for a rise, but this optimism seems born of rumors of unusual activity.

The range of prices on active iron and industrial stocks from Monday of last week to Monday of this week was as follows:

	Low	High		Low	High
Allis-Chalmers...	46¼	49¾	Int. Har. pf....	115	115
Allis-Chalm. pf..	95	95	Lima Loco.	69	73¼
Am. B. S. & Fdy.	76	79¾	Midvale Steel ..	29⅝	32⅝
Am. Can	93½	99¼	Nat.-Acme	13½	14½
Am. Can pf.....	108⅞	108⅞	Nat. En. & Stm..	69	70⅞
Am. Car & Fdy.	178	181	N. Y. Air Brake	37	40
Am. Loco.	130½	136¼	Otis Steel	12¾	14⅜
Am. Loco. pf...	117	117	Otis Steel pf....	68½	69½
Am. Radiator ..	82¼	83	Pressed Steel ...	64½	68
Am. Steel Fdries.	38⅝	40⅜	Pressed Steel pf.	91½	91½
Bald. Loco.	135⅝	140⅝	Ry. Stl. Spring..	117¼	118
Bald. Loco. pf...	111	112	Ry. Stl. Sp. pf..	117¾	117¾
Beth. Steel	64⅝	68¼	Replogle Steel...	26	27½
Beth. Stl. Cl. B..	64¼	67	Republic	59⅝	64
Beth. Stl. 8% pf.	108	108½	Republic pf.	94	95½
Brier Hill	17¼	17⅛	Sloss	51¾	54½
Br. Em. Steel...	7½	7½	Sloss pf.	83¼	83½
Chic. Pneu. Tool	83⅜	86⅛	Steel of Canada.	75¾	77¼
Colo. Fuel	27½	28⅛	Superior Steel...	33	33
Crucible Steel...	76¾	81¼	Un. Alloy Steel..	36¾	37⅞
Crucible Steel pf.	90⅜	90⅜	U. S. Pipe.....	29¼	32¼
Deere pf.	70	70½	U. S. Pipe pf....	69	69¾
Gen. Electric ...	178	183½	U. S. Steel.....	105⅞	108½
Gt. No. Ore Cert.	32¼	34¾	U. S. Steel pf...	118	118¾
Gulf States Stl..	96¾	101¼	Vanadium Steel.	39	42
Harbison Walk..	116½	116½	Va. I., C. & Coke	61	62
Inland Steel ...	46½	48½	W'house Air Br.	116	118
Int. Har.	88½	90⅛			

Inland Steel Co. Finances

The Inland Steel Co. has sold to Kuhn, Loeb & Co., New York, $10,000,000 7 per cent cumulative preferred stock and 168,540 shares of no-par common. The preferred stock is to be offered for sale at $104.50 and accrued dividend, and the common at $47.50 a share. With the money obtained from the sale the company will spend $7,500,000 for plant improvements and betterments, will redeem $3,831,000 outstanding bonds, and have $5,500,000 additional working capital. With this financing completed, the steel property will have but $750,000 6 per cent serial bonds outstanding. Stockholders on April 12 will be asked to authorize an issue of $30,000,000 preferred stock, $20,000,000 of which will be held in reserve. They also will be asked to change the 1,200,000 shares of common stock, having a par value of $25, to an equal number of new shares of no par value. With the new financing there will be 1,182,799 common shares outstanding.

Industrial Finance

The annual statement of the New Britain Machine Co., New Britain, Conn., shows a profit in 1922 of $93,274, whereas in 1921, it showed a loss of $286,000. The amount of business filled last year was $1,300,000, as compared with $800,000 in 1921. Unfilled orders are larger than at any time since September, 1920. The company is employing about 520 and operating on a 55-hour per week schedule.

The Savage Arms Corporation definitely abandoned negotiations for a $1,500,000 bond issue. Instead of such an issue it has sold $500,000 7 per cent preferred stock to a syndicate of bankers. Proceeds of this sale will be sufficient for working capital requirements.

In January and February of this year the Penn Seaboard Steel Corporation had a profit of $41,869 after all fixed charges. For the corresponding months last year the corporation showed a loss of more than $100,000.

Net sales of the Wickwire Spencer Steel Corporation in January were $2,168,846, and in February $2,182,363. With other income, and deducting miscellaneous charges, January showed a net income available for depreciation and bond interest of $173,456, and February $147,146, or at the rate of $1,921,212 per annum. The company last year operated at a loss of $840,265, and the year before that $2,397,652, while in 1920, it showed an operating profit of $3,352,589.

The White Co., Cleveland, reports sales during 1922 aggregating $37,268,226, an increase of $6,947,277 over 1921. Net profits were $3,770,617. After dividends and adjustments there was a surplus for the year of $1,799,400.

The Foote-Burt Co., Cleveland, manufacturer of drilling machines, reports an operating profit of $36,839 during 1922, but after interest charges and allowances of $50,721 for depreciation, there was a deficit of $64,611. The company reports orders on hand now in excess of $750,000, and that it is booked to capacity for at least six months.

The United Alloy Steel Corporation reports profits from operations in 1922 of $5,035,799, against a loss in the previous year of $67,523. After all charges net profit was $3,001,607, compared with a deficit of $2,747,049 in 1921. A surplus of $1,570,607 was shown after allowing dividends on preferred and common stock.

Dupont Motors, Inc., has issued 100,000 shares of no par value stock to be subscribed at $8 per share. Proceeds are to be used to produce and market the company's new Model C car and for other purposes.

The Standard Screw Co. reports net income for 1922 of $236,465, after depreciation and Federal Taxes, compared with $125,614 in 1921. Profit and loss surplus was $3,749,335 against $6,712,918 in the previous year.

Trade Changes

The J. C. Marr Machinery Co., 127-29 Water Street, Pittsburgh, has changed its name to the Marr-Galbreath Machinery Co., M. D. Galbreath, formerly manager of sales for the McCoy-Brandt Machinery Co., becoming a member of the firm.

Office and warehouse of the Kay Mfg. Co., Brooklyn, have been moved to 500 Driggs Avenue, that city, where plant area has been enlarged by over 60,000 sq. ft. Machinery and equipment have been added, increasing facilities 75 per cent.

Haverstick & Co., Inc., Rochester, N. Y., jobbers in mill and mine engineers' and contractors' supplies, are now located in a new concrete building, constructed on a plot 165 x 200 ft. in direct touch with the railroad siding. Additional construction of pipe storage facilities is now under way.

The Ideal Electric & Mfg. Co., Mansfield, Ohio, has announced the consolidation of its Chicago office, formerly located at 701 Fisher Building, with the Gebhardt Co. & Associates, 1419 Fisher Building, Chicago. James Kent, formerly in charge of the Chicago office, will have associated with him Mr. Watson, who for the past seven years has been in charge of the Electric Machinery Co., Minneapolis.

Dwight P. Robinson & Co., Inc., 125 East Forty-sixth Street, New York, engineers and constructors, have opened a Philadelphia office. Carl A. Baer, recently of the firm Baer, Cook & Co., engineers, and also a consulting engineer in the design of industrial, textile and power plants, is in charge.

Eugene W. Krueger, who was associated with Beverly L. Worden in the organization of the Worden-Allen Co., Milwaukee, in 1902, has been elected president of the company as the result of a re-organization which has followed the transfer of Mr. Worden's interests to other members of the concern. Mr. Worden has been inactive in the actual management for some time, having changed his residence to Newark, N. J., several years ago. William F. Kinsella, vice-president in charge of sales, is continued in this capacity. C. Martin, for many years at the head of the general construction department, has been elected secretary and treasurer. Edwin F. Zuleger has been elected assistant secretary and continues as general manager. The Worden-Allen Co. is a large fabricator and erector of steel structures and also is prominent as a general contractor. Substantial additions to plant and equipment are now being made to handle a materially increased volume of business.

Theodore Geissmann & Co., 624 South Michigan Avenue, Chicago, and 920 McKnight Building, Minneapolis, have been appointed district sales agents for the Central West by the Weldless Tube Co., Wooster, Ohio, manufacturer of locomotive and merchant boiler tubing and all classes of mechanical tubing, cold drawn or hot rolled.

The W. W. Sly Mfg. Co., foundry equipment, 4700 Train Avenue, Cleveland, has established a Chicago office in the Fisher Building, 343 South Dearborn Street, C. P. Guion in charge, and a Detroit office in the General Motors Build-

ing, M. T. Mortensen in charge. Both district managers have been with the company for several years, each in his own respective territory.

The Pennsylvania Crusher Co., Stephen Gerard Building, Philadelphia, has opened a branch office in Chicago, with C. S. Darling in charge. Temporary quarters will be in the Monadnock Building, but after May 1 the permanent location will be in the Illinois Merchants' Bank Building, 230 South Clark Street. The company's products consist of heavy duty coal preparation machinery and hammer mills for general purposes.

The C. O. Jelliff Mfg. Corporation, wire cloth, screens, etc., Southport, Conn., has opened a New York office at 350 Madison Avenue. H. F. Chase, formerly with the International Nickel Co., will be in charge.

The Bridgeport Brass Co., Bridgeport, Conn., has moved its Chicago district sales office from State Lake Building to the Wrigley Building.

The Oilgear Co., 64 Twenty-seventh Street, Milwaukee, hydraulic presses, pumps, speed drives, etc., has appointed the Cleveland Duplex Machinery Co. Inc., 1224 West Sixth Street, Cleveland, as representative in the Northern Ohio territory.

The Ludlum Steel Co. has established a Boston office at 80 Boylston Street, in charge of E. R. S. Reeder, branch manager of the company for several years and recent manager of tool steel sales of Wheelock, Lovejoy & Co. Prior to this change, the latter company represented the Ludlum Steel Co. in this territory.

T. J. Purnell, president Palmyra National Bank, and Jacob M. Noll, formerly general manager of the Nelson Valve Co., have taken over the Camden Mfg. Co., Camden, N. J. The business will be conducted as formerly in the manufacture of pipe bolt and casing dies.

The Cast Iron Pipe Publicity Bureau, now located at 165 East Erie Street, Chicago, will move to 556 Peoples Gas Building on May 1. Thomas F. Wolfe, research engineer, is in charge.

The Westinghouse Electric International Co. has opened a new office in Santiago, Cuba, in charge of B. Moss, Jr., and J. M. Zayas.

Brace, Mueller & Huntley, Inc., with offices in Buffalo and Syracuse, N. Y., have been appointed distributing agents in New York State west of Schenectady, for the Atlas Steel Corporation, Dunkirk, N. Y.

Automobile manufacturers of Detroit have purchased a controlling interest in the DeForest Radio Telephone & Telegraph Co. and plan to enlarge the plant which was recently transferred from High Bridge to Franklin Street and Central Avenue, Jersey City, N. J. Under the new plan the company will approximately double the present capacity.

The Gas Products Co., Columbus, Ohio, has imported and placed into operation two complete oxygen plants which produce by the liquid air process about five times as much oxygen as was produced in the old plant. A considerable number of new Red Head oxygen cylinders have been placed in service. Acetylene producing capacity has been tripled and a number of new cylinders have been added for loaning to customers.

The Ritter Can & Specialty Co., Inc., 1026-34 West Allegheny Avenue, Philadelphia, has changed its name to the Acme Can Co., Inc. At the same time it was decided that the trade mark Acmeco would be used to designate the company's product.

Several cement manufacturing plants of the Acme Cement Plaster Co., including those at Acme, Tex., and at points in New Mexico, Oregon and Michigan, have been acquired by the Certain-teed Products Corporation, New York. The purchase also includes large deposits of gypsum near Acme. It is understood that the Certain-teed company will increase the capacity of the mills at Acme.

The Pittsburgh office of the central district, Cutler-Hammer Mfg. Co., Milwaukee, will move on May 1 from the Farmers Bank Building to Rooms 950-953 Central Building. A. G. Pierce is district manager with headquarters in Pittsburgh.

The Pittsburgh branch of the Metal & Thermit Corporation, will be moved on May 1 from 801-807 Hillsboro Street, Corliss Station, to 1514 Fayette Street, N. S. In order to take care of the increasing business in the Pittsburgh territory a modern welding shop is now being constructed at the new quarters and will be equipped with facilities for making thermit welding repairs and relining crucibles.

Lasker & Minck, Inc., steel plate construction, have moved offices from 220 Broadway to 52 Park Place, New York.

The H. E. Marks Corporation, gypsum roofs, Pittsburgh, announces the appointment of the American Hard Plaster Co., Utica, N. Y., as its exclusive representative in Oneida and Herkimer Counties.

The H. E. Marks Corporation, gypsum roofs, Pittsburgh, has appointed James M. Hawkins, with offices at 705 Ellicott Square, Buffalo, as Buffalo and western New York representative.

The Alden Engineering Co., Inc., 15 Park Row, New York, has been appointed Philadelphia and Baltimore sales representative for the Sowers Mfg. Co., Buffalo, kettles, mixers, vacuum and pressure apparatus.

Plans of New Companies

The Acme Vending Corporation, Brooklyn, N. Y., has been incorporated with capital stock of $50,000, to manufacture automatic weight machines and kindred equipment. It is taking over a manufacturing business with a plant at Brooklyn. Plans for expansion will be considered within a few weeks. The incorporators are: S. W. Silverstein, N. J. Walbaum and B. Sterberg. Raphael & Randel, 116 West Thirty-ninth Street, New York, represent the company.

The Anaklin Lock & Alarm Co., care of the Corporation Trust Co. of America, Wilmington, Del., was recently incorporated with capital stock of $1,100,000 to manufacture fire alarms and burglar alarm systems. Plans are not yet formulated, but it is known that the company will not do any building at present.

The Scandia Products Co., New York, recently incorporated with capital stock of $50,000 and 1500 shares of common stock, no par value, to manufacture railroad equipment, aluminum products, etc., has suspended the work of organization for a time, owing to the absence of one of the principals who will be in Europe for several weeks. The incorporators are: E. R. Hollander, W. A. Morschhauser and R. L. MacDuffie. Katherine P. Christopher, 2 Rector Street, New York, heads the company.

The Anchor Tool & Supply Co., Inc., 24 John Street, New York, was recently incorporated with capital stock of $100,000, to manufacture tools and supplies. It has taken over the tool and supply department formerly conducted by E. P. Reichhelm & Co., Inc., New York, and in conjunction with these activities the company will act as representative for the American Swiss File & Tool Co. and the American Gas Furnace Co. The Reichhelm company has disposed of its several interests and now confines itself to the manufacture of files at Elizabethport, N. J. F. H. Grefe is treasurer of the new company.

The Acme Cushion Wheel Co., 2 Columbus Circle, New York, which was recently incorporated with capital stock of $50,000, will engage in the manufacture of mechanical products, chief of which is a wheel of special design. A directors' meeting has been called at which the method of operation will be determined. M. Cornfield heads the company.

The Brilliant Tone Radio Products, Inc., New York, has been incorporated with capital stock of $25,000, to manufacture wireless equipment. It is still in the formative stage and plans for the future are as yet indefinite. The incorporators are: G. Mitchell, N. Krauss and S. S. Goldstein. Corporate representative is Samuel Rosenberg, 309 Broadway, New York.

The Auto Body Carriage Co., 24 Stagg Street, Brooklyn, recently incorporated with capital stock of $20,000, will engage in manufacturing automobile bodies. The incorporators are: D. Reich, M. Fleischer and S. Eig.

The Hudson Automatic Sprinkler Corporation, Brooklyn, has been incorporated with capital stock of $100,000, to manufacture sprinkling devices and equipment. Nothing has developed beyond the fact of incorporation, but a meeting of the principals is scheduled for an early date and at that time the method of operation will be decided. The incorporators are: N. Floyd, Jr., E. L. Hubbard and D. S. Budd. The company is represented by Frederick N. Van Zandt, 220 Broadway, New York.

The Standard Motor Products Co., 63 Page Street, San Francisco, has been incorporated under California laws with capital stock of $500,000 and is manufacturing automotive parts. All work is done in its own shops. It has a completely equipped plant at 38 Rose Street. The chief products are crank shaft bearings, bushings and shims. Charles Stone is president.

Nodens, Inc., 101 Bridge Street, Brooklyn, N. Y., has been incorporated with capital stock of $25,000, to manufacture equipment and supplies. It has acquired the hardware and tool jobbing house which has been conducted by A. Noden for over 40 years. Negotiations will be completed within a week. The new management plans to expand present facilities. The incorporators are: A. and V. A. Noden.

The Ever-Ready Auto Top Corporation, 104 West Mount Royal Avenue, Baltimore, Md., recently incorporated as a manufacturer, will confine present activities to functions of distribution.

Machinery Markets and News of the Works

VOLUME IS INCREASING

Machine-Tool Business Continues to Show Expansion

Diversity of Manufacturing Interests Buying Tools Indication of a Healthy Growth

The volume of machine-tool buying is increasing, purchases thus far in April indicating that it will be a better month than March with most plants, and March was generally considered the best month in two years.

A satisfactory feature of current demand is that it springs from a wide variety of manufacturing plants, with little spectacular buying. Single machines predominate.

Recent price advances have undoubtedly checked some purchases, but the fact that the total volume is growing shows the urgent need of equipment to take care of the rapidly expanding business in all metal-working lines.

A Chicago company bought about $20,000 worth of tools to be delivered in the fall, this unusual order being placed, of course, to take advantage of the lower prices prevailing up to 10 days to two weeks ago.

A shortage of skilled mechanics and even common labor is being felt in many industrial centers, and while this tends toward increasing the demand for labor-saving equipment, it also has its effect on machine-tool plants, which are finding it difficult to increase operations owing to their inability to get men. Some pyramiding of wages has resulted from the bidding by employers.

The Wabash Railroad has issued a list at St. Louis. The Illinois Central is expected to close for the remainder of its recent list next week. Other railroad business is pending at Chicago. Three large machines were purchased by the Akron, Canton & Youngstown Railroad. The Sloan Valve Co., Chicago, has ordered 10 turret lathes.

New York

NEW YORK, April 10.

THE volume of machine-tool business gains steadily, with April showing promise of being better than March, which was the best month in fully two years. The gain in volume has been made despite price advances, though in individual instances manufacturers have decided not to purchase the machines they had inquired for, either deciding to get along without the equipment desired or turning to the second-hand equipment market in the hope of finding what they want at lower prices. New machine tools on the average are now back to the peak prices of 1920. In some instances they are slightly lower but in other cases they have gone above the 1920 prices.

The Belmont Metal Ceiling Co., 2502 Webster Avenue, New York, will commence the erection of a new one and one-half story plant, 40 x 75 ft., on Chatterton Avenue. Lawrence Brady is president.

The Metal Stamping Co., Thirteenth Street, Long Island City, is inquiring for three presses, Bliss or similar type.

A power plant will be constructed by the Radio Corporation of America, Woolworth Building, New York, in connection with its proposed super-power radio station in Brazil, to cost more than $3,000,000. Similar power plants will also be built in connection with two other high power wireless stations in South America, and at the five stations to be located in China, each to cost in excess of $1,500,000 with equipment. The China installations will be made in conjunction with the Federal Telegraph Co. of California, San Francisco. James G. Harbord is president of the Radio Corporation.

George A. Burr, Sabinoa Hidalgo, N. L., Mexico, representing local industrial interests, is in the market for machinery to manufacture files and rasps, steel pens, tin cans, and for a cottonseed oil mill.

A manual training department will be installed in the new high and grade school to be erected at Spring Valley, N. Y., estimated to cost $250,000, for which bids are being taken on a general contract. E. Sibley, Palisade, N. J., is architect.

The Munson Mill Machinery Co., Broadway, Utica, N. Y., is preparing plans for new works, consisting of a main machinery building, foundry and pattern shop, power house and general operating building, estimated to cost $350,000 with equipment. Charles Kiehm, Gardner Building, is architect.

The C. Barrett Motor Co., 1211 Miller Street, Utica, N. Y., operating a machine and motor repair shop, is in the market for a speed lathe.

The Eastern Precision Electrical Instrument Co., Rockville Centre, L. I., manufacturer of wireless instruments, is making inquiries for machine screws, brass pressed screws and nuts, hard rubber and other material.

The American Manufacturers' Foreign Credit Underwriters, Inc., 110 William Street, New York, has received an inquiry from a company at Tabasca, Mexico, desiring to get in touch with American manufacturers of flashlights, batteries and other electrical products.

A list of machinery for installation in a new ice-manufacturing plant is being arranged by the Dairymen's League Co-Operative Association, 222 Lafayette Street (H. A. Seick, in charge), Utica, N. Y.

The Scropie Co., Tupper Lake, N.Y., operating stone quarries, plans the installation of an electrically operated air compressor, portable forge, air drill and other equipment.

The Standard Oil Co. of New Jersey, 26 Broadway, New York, will commence the erection of a new power house at its refinery, foot of East Twenty-sixth Street, Bayonne, N. J., to cost about $500,000 with equipment.

Edward T. Jewett, head of the Paige-Detroit Motor Car Co., Fort and McKinstry Streets, Detroit, and associated local interests, have acquired control of the De Forest Radio Telephone & Telegraph Co., Franklin Street and Central Avenue, Jersey City, N. J. The company recently removed its plant from High Bridge, N. Y., to the former factory of the Franco-American Food Co., Jersey City, and the new owners plan to enlarge the works to double the present capacity. Dr. Lee De Forest will continue with the company as consulting engineer.

The Canciato Co., 770 Bleecker Street, Utica, N. Y., operating a machine shop, plans the installation of an engine lathe, air compressor and other equipment.

Lockwood, Greene & Co., 101 Park Avenue, New York, architects and engineers, have plans for a new foundry, 100 x 120 ft., and pattern shop at the plant of E. M. Freese & Co., Galion, Ohio, manufacturer of clay-working and brick machinery, to cost about $100,000 with equipment.

A manual training department will be installed in the new three-story high and grade school to be erected at Madison,

The Crane Market

BOTH electric overhead and locomotive cranes are extremely active with numerous inquiries current and a fairly large number of orders reported. Price is an important consideration, particularly as the tendency is upward as a result of increased costs and wages. Revised quotations requested on a crane inquiry, bids on which were first submitted in January, resulted in a number of bidders increasing the price as much as several hundred dollars. Among current inquiries is a request for bids on a 5-ton pillar crane from the New York, Ontario & Western Railroad, New York. The General Electric Co., through the purchasing department, Schenectady, N. Y., is receiving bids on a 2-ton, 30-ft. span overhead crane. The New York Central & Hudson River Railroad, New York, closed bids on April 9 for a 25-ton gantry crane. The Central Railroad of New Jersey is reported as about to close on a 25-ton gantry crane, the inquiry for which has been current for several weeks. The Simmons Machine Tool Corporation, 981 Broadway, New York, is about to close on a 15-ton, 36-ft. 6-in. span electric traveling crane and the Mexican Petroleum Co., is about to purchase a 10-ton hand power crane for use in New England. The Lukens Steel Co., Coatesville, Pa., which recently purchased three small cranes from the Pawling & Harnischfeger Co., for New Orleans, has also purchased some small cranes from the Shepard Electric Crane & Hoist Co. The Baldwin Locomotive Works, Philadelphia, has purchased two 5-ton electric traveling cranes. The Reading Iron Co., Reading, Pa., is asking for quotations on a used 10-ton, 60-ft. to 80-ft. span electric traveling crane and a 150-ft. runway.

Among recent purchases are:

Pennsylvania Railroad, Eastern Region, Philadelphia, a 3-ton grab bucket crane from the Milwaukee Electric Crane & Mfg. Co.

The Baldwin Locomotive Works, Philadelphia, a 7½-ton monorail hoist, cage controlled, from the Milwaukee Electric Crane & Mfg. Co.

Lebanon Iron Co., Lebanon, Pa., a 5-ton, 28-ft. 8-in. span, 3-motor, underhung traveling crane from the Shepard Electric Crane & Hoist Co.

American Locomotive Co., 30 Church Street, New York, a 150-ton and a 20-ton, overhead traveling cranes for the Cook shops at Paterson, N. J., from the Shaw Electric Crane Co. This leaves a 20-ton overhead traveling crane to be purchased for Montreal, Que.

Burnham Boiler Corporation, Irvington, N. Y., three 1-ton, 22-ft. span, floor-operated, single I beam cranes for Lancaster, Pa., through Frank D. Chase, from the Shepard Electric Crane & Hoist Co. Additional cranes were purchased elsewhere.

Walker Mfg. Co., Racine, Wis., a 2-ton, cage-control, electric hoist from the Shepard Electric Crane & Hoist Co.

Philadelphia Electric Co., a 3-ton grab-bucket crane from the Shepard Electric Crane & Hoist Co.

Phoenix Utility Co., 61 Broadway, New York, a 65-ton, gantry crane from the Minneapolis Steel & Machinery Co., Minneapolis, and trolley from the Milwaukee Electric Crane & Mfg. Co.

Utah Copper Co., 25 Broad Street, New York, a 60-ton, 60-ft. span, 4-motor overhead traveling crane from the Northern Engineering Works.

Industrial Steel Casting Co., Toledo, Ohio, a 3-ton, 27-ft. span, 3-motor electric traveling crane from the Northern Engineering Works.

American Car & Foundry Co., New York, two 5-ton, 77-ft. 6-in. span, overhead traveling cranes from an unnamed builder.

J. G. White Engineering Corporation, 43 Exchange Place, New York, a 15-ton, 12-ft. span, 1-motor overhead traveling crane from Maris Brothers, Philadelphia.

Maine Central Railroad Co., Portland, Me., a 200-ton, locomotive hoist from the Whiting Corporation.

Maine Central Railroad Co., Portland, Me., a 40-ton, 50-ft. boom locomotive crane from the Industrial Works.

Union Pacific Railroad, 120 Broadway, New York, a No. 3 pile driver from the Industrial Works.

Western Union Telegraph Co., 195 Broadway, New York, a 20-ton locomotive crane from the Browning Co.

Lake Sand Co., Michigan City, Ind., a 20-ton, 50-ft. boom used locomotive crane with 1-cu. yd. bucket from Philip T. King, 30 Church Street, New York.

The Alliance Machine Co., Alliance, Ohio, reports the following sales of cranes during the first quarter of this year: Strothert & Pitt, Bath, England, a 125-ton ingot stripper and a 10-ton soaking pit crane; Follansbee Bros. Co., Toronto, Ont., an 8-ton trailer trolley and a 15-ton standard overhead crane; Central Tube Co., Pittsburgh, a 7½-ton, 100-ft. span overhead traveling crane; Central Steel Co., Massilon, Ohio, a 25-ton overhead crane; American Rolling Mill Co., Middletown, Ohio, a 30-ton overhead crane; Tata Iron & Steel Co., Sakshi, India, through Perin & Marshall, New York, a 40-ton overhead traveling crane; Mansfield Sheet & Tin Plate Co., Mansfield, Ohio, a 10-ton, 75-ft. span, magnet handling crane; United Alloy Steel Corporation, Canton, Ohio, two 10-ton, 90-ft. span overhead cranes; Bethlehem Steel Co., Bethlehem, Pa., a 15-ton trolley and a 5-ton monorail hoist; Compania Siderurgica del Mediterraneo, Sagunta, Spain, through F. C. Roberts & Co., Philadelphia, a 150-ton, 78-ft. 6-in. span rope stripper and a 10-ton soaking pit crane; Wilkoff Co., Youngstown, Ohio, a 10-ton overhead traveling crane; National Tube Co., Pittsburgh, a 20-ton overhead traveling crane; Keystone Steel & Wire Co., Peoria, Ill., a 10-ton double legged gantry crane; Carnegie Steel Co., Pittsburgh, three 125-ton, 47-ft. 11½-in. span, four girder ladle cranes; National Enameling & Stamping Co., East St. Louis, Mo., a 20-ton overhead crane; Inland Steel Co., Indiana Harbor, Ind., a 175-ton, four girder, ladle crane, four 15-ton overhead cranes and a 15-ton trolley, two 10-ton cranes and a 5-ton crane; Youngstown Steel Co., Youngstown, Ohio, two 5-ton puddle furnace chargers; Standard Steel Works Co., Burnham, Pa., a 5-ton revolving type manipulator; and the Union Electric Steel Co., Carnegie, Pa., a 5-ton radial type forging manipulator.

N. J., to cost $300,000. Guilbert & Betelle, 546 Broad Street, Newark, are architects.

Fire, April 3, destroyed a portion of the plant of the Irvington Cooperage Co., Cordier Street, Irvington, N. J., with loss estimated at $100,000, including power house and other machinery. It is planned to rebuild. Charles Ossner is president.

Ovens, power equipment, conveying and other machinery will be installed in the new plant to be erected by the Long Branch Baking Co., Long Branch, N. J., estimated to cost $65,000. John N. Pierson & Son, 175 Smith Street, Perth Amboy, N. J., are architects.

The Public Service Corporation, Public Service Terminal, Newark, will commence the erection of a new power house at 1223-29 Broad Street, to cost about $100,000.

Bids will be asked on a general contract about April 15 for a two-story and basement high school, 100 x 150 ft., with manual training department, at Matawan, N. J., estimated to cost $130,000. John N. Pierson & Son, 175 Smith Street, Perth Amboy, N. J., are architects.

The Steffens-Amberg Co., 262 Morris Avenue, Newark, manufacturer of saddlery hardware, etc., is taking bids for a two-story addition, 75 x 100 ft., at 142-46 Bruce Street, to be used as a forge shop, estimated to cost $40,000. Alfred Peter, 828 Broad Street, is architect. August T. Steffens is president.

The National Spring & Welding Co., Dickerson Street and Morris Avenue, Newark, has been organized to succeed to the plant and business of the National Welding Co. and will extend the works. Clifford H. Phillips is treasurer and general manager.

The Board of City Commissioners, Ocean City, N. J., has selected a site at Atlantic and Ocean Avenues, Fifth and Sixth Streets, for a new high school, with manual training department, estimated to cost $500,000, for which plans will be prepared at once.

A manual training department will be installed in the proposed high school to be erected at Harrison, N. Y., estimated to cost $300,000, for which plans will soon be prepared. George W. Hall is secretary of the Board of Education.

New England

BOSTON, APRIL 9.

FURTHER expansion in machine-tool sales in this territory is reported. The volume of passing business is more significant because large individual lists are lacking. Calls for equipment also are more numerous and include almost every type of machine. A closer application to list prices is noted. The number of individual prospects possibly is larger than at any time since the war, but the aggregate number of tools involved is smaller. In certain lines New England manufacturers are busier than before the war. This is particularly true of lathe and broaching machine builders. One local representative of a New England lathe maker in March oversold his quota by more than 50 per cent and bids fair to do as well this month. Milling machine makers are busier than at any time since 1920, good orders having been taken from Western railroads as well as from various industries. Sufficient prospects for additional milling machines are in hand to practically assure full operations for several months at least. Used cylinder regrinding machine inquiries are possibly the greatest on record. Inquiries come from points as far as Texas.

Sales the past week include two milling machines, a shaper, a 14 in. x 6 ft. Hendley and two smaller lathes of different design, to a Salem manufacturer; two Porter-Cable lathes and other equipment to a nearby gear maker; four additional Porter-Cable lathes, making a total of twelve, to a textile machinery maker; one 14 in. x 6 ft. and one 16 in. x. 16 ft. lathe to two Woonsocket, R. I., mills; lathes of various makes and sizes to Rhode Island yarn and textile interests; nine turret machines to the General Electris Co., West Lynn; a 14 in. vertical surface grinder and a small straightening press, to the Saco-Lowell Shops, Boston; a small grinder layout to a Fitchburg, manufacturer; all new tools.

A Massachusetts maker of precision machine alining levels has taken an order for six additional levels from the Japanese Government, making a total of 12 so far this year. The Laconia, N. H., school list is reported as about to be closed, new equipment being involved. A Quincy, Mass., interest is inquiring for a punch having a minimum 20 in. throat, a bevel shear having a capacity for ⅜ in. plates, a set of flat and a set of angle rolls, all motor driven. The Goodspeed Machine Co., Winchendon, Mass., is in the market for a used 48 x 48 in. planer, and a Massachusetts pump manufacturer for several new radial drills.

Small tools and machine parts are more active than at any time this year. The Boston Gear Works, Norfolk Downs, Quincy, is operating nights in an effort to keep up with orders. Local interests have advanced prices on Norton Co. grinding wheels.

The Stewart-Skinner Co., 17 Green Street, Worcester, Mass., household and hardware specialties, has voluntarily retired from business, and the metal-working equipment was sold at auction the past week. The real estate, plant, machinery and equipment of the Hancock Perfecting Line-up Machine Co., 93 Brookline Street, Lynn, will be sold at auction this week.

Bids are being taken by the Boston Stove Foundry Co., 202 Border Street, East Boston, for a two-story, 30 x 30 ft. addition.

Bids closed last week on a three-story, 51 x 221 ft. addition, to cost approximately $100,000, for the Judson L. Thomson Mfg. Co., Waltham, Mass., rivets.

The Saco-Lowell Shops, Boston, are contemplating a $350,000 expansion, at Lowell, Mass. Plans call for a three-story and basement 80 x 400 ft. machinery manufacturing unit for which practically all machine tools have been acquired.

The Judd Paper Co., 166 Race Street, Holyoke, Mass., will take bids at once for a three-story and basement building, 90 x 100 ft., to cost about $85,000. George P. B. Alderman & Co., 316 High Street, are architects.

A manual training department will be installed in the high school to be erected at Deerfield, Mass., estimated to cost $130,000, for which an architect will soon be selected.

Bird & Sons, Inc., East Walpole, Mass., manufacturer of roofing products, has commenced excavations for a one and two-story addition, 90 x 540 ft., estimated to cost $300,000, including machinery. Monks & Johnson, 99 Chauncy Street, Boston, are architects.

The New England Power Co., Worcester, Mass., will issue stock for $3,000,000 to defray the cost of proposed extensions and improvements, including a hydroelectric power development at Whitingham, Vt.; a new power house at Lanesboro, Mass., steel tower transmission lines, etc.

A manual training department will be installed in the new junior high school building to be erected on Orchard Street, Belmont, Mass., estimated to cost $110,000, for which ground will be broken at once. McLaughlin & Burr, 88 Tremont Street, Boston, are architects.

A one-story power house will be erected at the new three-story hospital on Lincoln Street, Worcester, Mass., to be built by the Hahnemann Hospital, Dr. A. E. Cross, head, estimated to cost $300,000. Kendall, Taylor & Co., 142 Berkeley Street, Boston, are architects.

The Edison Electric Illuminating Co., Brockton, Mass., is considering plans for enlargements in its generating plant for considerable increase in capacity.

A manual training department will be installed in the proposed junior high school to be erected at Norwood, Mass., estimated to cost $125,000, for which an architect will soon be selected.

The Gilbert & Bennett Co., Georgetown, Conn., manufacturer of wire products, will hold in abeyance the erection of its proposed three-story wire mill, 50 x 135 ft., for which bids recently were asked, and will call for new bids later. Work will proceed on a one-story structure, 45 x 50 ft., for which a contract has been let to the H. Wales Lines Co., Meriden, Conn.

The Uncas Paperboard Co., Thamesville, Conn., has plans for additions to increase the capacity from 100 to 200 tons per day, to include new mechanical drying equipment and other machinery. James E. Smith is president.

Philadelphia

PHILADELPHIA, APRIL 9.

CONTRACT has been awarded by the W. J. McCahan Sugar Refining Co., Front and Chestnut Streets, Philadelphia, to F. L. Hoover & Sons, 1023 Cherry Street, for an addition to cost about $400,000, with machinery.

The Pennsylvania Equipment Co., Norwood Station, Pa., is in the market for two 15-ton, 36-in. gage, four-wheel saddle tank locomotives for industrial service.

The Robinson Iron & Steel Co., Manayunk, Philadelphia, is planning for the installation of equipment at its fabricating plant, including shears, power hammer and punching machines.

The R. E. Tongue & Brothers Co., Philadelphia, has awarded contract to the William Steele & Sons Co., 219 North Broad Street, for an addition to its glass plant at Collins and Allegheny Streets, to cost $60,000 with machinery.

The Baldwin Locomotive Works, 500 North Broad Street, Philadelphia, is contemplating additions and improvements in its plant at Eddystone, Pa., estimated to cost $4,000,000 with machinery.

The Steward & Romaine Mfg. Co., 124 North Sixth Street, Philadelphia, manufacturer of expansion bolts, rivets, etc., plans the installation of additional forming and punching presses and screw-cutting machinery. N. H. Steward is treasurer.

William Boekel & Co., 516 Vine Street, Philadelphia, manufacturers of surgical equipment and appliances, have awarded contract to Cramp & Co., Denkla Building, for the erection of a six-story plant, estimated to cost $250,000 with machinery. Julius Boekel is head.

The Pennsylvania Railroad Co., Philadelphia, has awarded contract to the Hughes-Foulkrod Co., Commonwealth Building, for a new one-story machine and locomotive repair shop, 340 x 690 ft., at its Juniata shops, Altoona, Pa., with a portion of the structure to be used for erection service. The installation will include two 250-ton traveling cranes, with runways the entire length of the building and four 50-ton cranes. The shop will be equipped for an output of 100 locomotives per month. It is estimated to cost $1,200,000. Bids for other shop buildings will soon be asked.

The Central Engineering & Construction Co., Trenton, N. J., has acquired property, 100 x 215 ft., on Mellon Street, as a site for the erection of new structural steel and iron shops, for which plans will soon be prepared. Grover C. H. Jemison is president, and David A. Sutphin, treasurer.

The Reeves Foundry Co., North Logan Avenue, Trenton, N. J., will commence the erection of a one-story addition to cost $10,000, exclusive of equipment.

A vocational shop will be installed in the new junior school No. 4, to be erected on Dayton Street, Trenton, N. J., to cost close to $900,000. Ernest A. Sibley and William A Klemann, First National Bank Building, are architects. A manual training department will also be installed in the

new senior high school to be constructed on the Chambers tract, recently acquired, to cost about $1,000,000, for which plans will be prepared during the summer.

The Chantrell Hardware & Tool Co., Reading, Pa., is taking bids for a one and two-story foundry at Millmont, 60 x 80 ft. Fred A. Mahlenberg, Sixth and Court Streets is architect.

The Huntington Machinery & Supply Co., East South Street, Wilkes-Barre, Pa., is planning for the installation of new tools for bench and hand service.

The Harrisburg Light & Power Co., Harrisburg, Pa., is arranging an appropriation of $700,000 for extensions and improvements in power plants and system.

A manual training department will be installed in the new two-story and basement high school to be erected at Pringle, Pa., estimated to cost $100,000. J. A. Boyle, Bennett building, Wilkes-Barre, Pa., is architect.

The Rowe Motor Mfg. Co., Lancaster, Pa., manufacturer of automobile trucks and parts, is planning to rebuild the portion of its plant, destroyed by fire April 2, with loss estimated at $300,000 with machinery. Pending reconstruction, the company will use a portion of the works of the Lancaster Body Co., an affiliated organization.

The Pennsylvania Door & Sash Co., Twenty-fifth and Callowhill Streets, Philadelphia, will commence the erection of a one and two-story plant, 195 x 315 ft., with one-story extension, 41 x 81 ft., at Atlantic and F Streets, to cost $85,000 with machinery.

The Mentzer Mfg. Co., Cameron and Forster Streets, Harrisburg, Pa., manufacturer of concrete products, contemplates the erection of an addition and improvements in the present works. Samuel F. Mentzer is head.

The Board of Education, Easton, Pa., has approved plans for a two-story high school at Twelfth and Northampton Streets, estimated to cost $175,000, with manual training department, and will take bids at an early date.

The E. T. Fraim Lock Co., Park Avenue, Lancaster, Pa., is taking bids for a one-story foundry, 42 x 170 ft. J. Wilmer Hershey, 1012 East Orange Street, is architect. Samuel E. Fraim is president and general manager.

The Defiance Auto Lock Co., Allentown, Pa., has arranged for the removal of its assembling department to Lehighton, Pa. Later a new plant will be established at the latter place for all branches of manufacture. Walter McLean is president, and A. F. Landis, treasurer.

The National Steel Construction Co., Inc., has taken over the plant of H. S. Kerbaugh, at Bellwood, Pa., heretofore devoted to machinery manufacture annd repairs, and will remodel the works for the manufacture of gasoline tanks and fabricated steel products. Richard I. Motysek is president.

The Metropolitan Edison Co., Reading, Pa., has acquired property on the Hubley farm, Middletown, Pa., as a site for a new electric generating plant, steam-operated, estimated to cost $3,000,000 with machinery.

Pierre S. Devers, 228½ East Walnut Street, Lancaster, Pa., will take bids about April 16 for a one-story machine shop in connection with a public garage, 90 x 250 ft. The installation will include lathes, grinding machine, boring machine and other tools. Frank Everts, Jr., 122 East King Street, is architect.

A manual training department will be installed in the new two-story and basement high school to be erected at Parnassus, Pa., estimated to cost $150,000, for which ground will be broken at once.

The Supreme Roller Bearing Co., Coudersport, Pa., recently organized with Lambert H. Vervoort, president, is negotiating for the purchase of the local plant of the Graham Roller Bearing Co., which has been inactive for a number of months. The structure will be remodeled and additional machinery installed for the production of automobile bearings.

The Hazleton Mfg. Co., Cedar and Hemlock Streets, Hazleton, Pa., is planning for extensions to cost about $100,000, including machinery, to double, approximately, the present capacity. The company has recently been reorganized.

Construction which will represent an investment of more than $250,000 has been started on extensions to the plant of the Wilmington Fibre Specialty Co., Wilmington, Del. Included in the group of buildings will be a one-story steel and brick structure 83 x 168 ft. and a three-story mill type building, 64 x 108 ft. A third structure will house two 20,000 gal. tanks for the storage of crude oil for use as fuel in the power plant which is being equipped with oil burners to heat a battery of boilers having a capacity of 75 hp. each.

Baltimore

BALTIMORE, April 9.

TENTATIVE plants are being considered by the Ford Motor Co., Highland Park, Mich., for the erection of an assembling plant at Charlotte, N. C., estimated to cost $1,000,000 with equipment. Negotiations are under way for a site.

Fire, April 1, destroyed a section of the car and locomotive repair shops of the Western Maryland Railway Co., Baltimore, at Hagerstown, Md., with loss estimated at $300,000. It is planned to rebuild.

Samuel T. Williams, 223 North Calvert Street, Baltimore, machinery dealer, is in the market for an electric hoist, single drum, 60 to 75 hp. with 400 ft. rope capacity.

The Almond Light & Power Co., Albemarle, N. C., has acquired a local power plant and contemplates extensions, including the installation of additional equipment. Branch stations will be constructed at Richfield and New London, N. C. Jethro Almond heads the company.

Fire, March 30, destroyed a portion of the works of the Piedmont Motor Co., Asheville, N. C., with loss estimated at $30,000.

A new power house will be constructed by the Lydia Cotton Mills, Clinton, S. C., in connection with an addition to double the present output, estimated to cost $750,000. M. S. Bailey is president.

The Virginia-Carolina Equipment Co., Lynchburg, Va., has inquiries out for a tractor crane, with a clam-shell bucket; also for about two miles of used portable track rails, 24 in. gage, 15 ft. sections.

The Potomac Electric Power Co., 231 Fourteenth Street, N. W., Washington, has commissioned Stone & Webster, Inc., Boston, engineer, to prepare plans for a new electric generating plant at Bennings Station, near Washington, with capacity of 20,000 to 25,000 kw., estimated to cost $1,000,000 with machinery and transmission system.

A manual training department will be installed in the new two-story high school to be erected at Beaufort, S. C., estimated to cost $100,000, for which plans will soon be prepared.

The Southeastern Portland Cement Co., Macon, Ga., recently organized, has acquired property at Ainslie, Ga., as a site for a new mill to cost $300,000 with power house, machine shop and other departments. W. Jordan Massee, head of the Bibb Brick Co., Macon, is president.

The Rome Stove & Range Co., Rome, Ga., has awarded contract to the Ingalls Iron Works, Birmingham, for a one-story addition to cost about $25,000. A. F. Selman is secretary.

Electrically operated pumping machinery will be installed by the Town Council, Elkton, Va., in connection with a waterworks installation estimated to cost $65,000.

The General Purchasing Officer, Panama Canal, Washington, will receive bids until May 1 for equipment as specified in circular 1522, including steel pinions, phosphor bronze rope, wire lath, steel rope, hacksaw blades, wire cloth, etc.

The Cooleemee Ice & Laundry Co., Cooleemee, N. C., recently organized with a capital of $100,000, will build an ice-manufacturing plant and one-story power house.

A manual training department will be installed in the new high school to be erected by the Buncombe County Board of Education, Swannanoa, N. C., estimated to cost $100,000. Frank B. Simpson, Raleigh, N. C., is architect.

The Hackley-Morrison Co., 1708 Lewis Street, Richmond, Va., machinery dealer, is in the market for two 150 hp. horizontal return tubular boilers, 125 lb. steam pressure; one 100 hp. boiler, same type, and 50 and 35 hp. locomotive type boilers; one 1250 kva. turbo-generator, and one 625 kva. generator; 80 hp. slide valve engine, with auxiliary equipment; 40 hp. hoisting engine, and 26 x 60-in. heavy duty Corliss engine; 20 x 40 cast steel pulleys; 1500 ft. 1½ in. steel wire rope; two 50 hp. and one 75 hp. motor.

The Porcelain Enamel & Mfg. Co., Eighth and O'Donnell Streets, Baltimore, has acquired 7 acres on Eastern Avenue as a site for a new plant to cost in excess of $150,000 with machinery. It will replace the works recently destroyed by fire.

The Putman Mills & Power Co., Eatonton, Ga., is considering the erection of a new power plant with initial capacity of about 750 hp., estimated to cost $65,000 with machinery.

J. M. Torrence, Norcross, Ga., is in the market for a foot-power shear for working tin and metal plate. A smaller bench shear will also be purchased.

A manual training department will be installed in the new high school to be constructed in the Elon district, estimated to cost $90,000, for which plans will soon be drawn.

The Amherst County School Board, Amherst, Va., is in charge.

A floor of the new four-story automobile service building, 45 x 135 ft., to be erected at 1707 L Street, N. W., Washington, by William T. Galliher, Washington, will be equipped as a machine and repair shop. The structure will cost $225,000. Robert F. Beresford, Washington, is architect.

Fred C. Dreyer, P. O. Box 200, Cumberland, Md., machinery dealer, has inquiries out for a duplex boiler feed steam pump, with capacity of 12,000 to 15,000 gal. per hr.

A power house will be constructed by the Grendel Mills, Greenwood, S. C., in connection with an addition, estimated to cost $500,000. J. P. Abney is president.

The Spartansburg Lumber & Mfg. Co., Spartansburg, S. C., is organizing a subsidiary company to build and operate a mill for the manufacture of veneered doors and other hardwood products. L. D. Proffit is head.

The Interstate Cooperage Co., Elizabeth City, N. C., is planning to rebuild its saw mill department, recently destroyed by fire with loss of $55,000, including machinery and power equipment.

Byrd Brothers, Route 3, Salisbury, Md., are in the market for an air compressor, belt driven, 80 to 100 lb. pressure; also, for a steam drill, about 3¼ in.

A manual training department will be installed in the new three-story high school to be erected at Carthage, N. C., estimated to cost $100,000. C. Gadsden Sayre, Raleigh, N. C., is architect.

Allan Anderson, Timmonsville, S. C., is organizing a company to build and operate a plant for the manufacture of hardwood veneer products. A 2-acre site has been selected. The mill is estimated to cost about $35,000.

O. L. Smith, Kernersville, N. C., has inquiries out for sheet-metal working machinery.

The H. S. Storr Co., 116 West Martin Street, Raleigh, N. C., is completing plans for a new two-story furniture manufacturing plant, 60 x 160 ft., to replace its factory recently destroyed by fire with loss of about $80,000. It will specialize in the manufacture of office furniture and filing equipment. H. S. Storr is president.

Pittsburgh

PITTSBURGH, April 9.

MACHINE tool activities again are on a rising scale, with sales and inquiries more numerous. In metal-working industries it is generally accepted that a good business is assured for the remainder of the year, especially since a pronounced tendency has developed among iron and steel producers to stabilize prices and prevent advances to levels which would stop buying. This has loosened a good many machine tool orders. The price tendency still is upward, especially on cranes and other heavy machinery, while there is a strong belief that higher prices for power equipment will be announced soon. Crane orders have been fairly numerous.

The Jones & Laughlin Steel Corporation has placed a 15-ton 85 ft. span dock crane for Woodlawn, Pa., with the Alliance Machine Co., and a 15-ton 80 ft. span dock crane, to serve its Soho works in Pittsburgh, with the Cleveland Crane & Engineering Co. The latter also was awarded two 10-ton cranes for the Pittsburgh Steel Products Co. for installation at Monessen, Pa. The Bedford Foundry & Machine Co. was low bidder for a crane for the new water filtrations plant for the city of Wheeling, W. Va. The Pittsburgh-Des Moines Steel Co. is taking bids on a 10-ton crane for its Des Moines, Iowa, plant. The Union Electric Steel Corporation has placed a 5-ton radial manipulator with the Alliance Machine Co.

The Union Railroad, Union Arcade, Pittsburgh, interplant railroad in Pittsburgh of the Steel Corporation, is in the market for an axle lathe and a car wheel borer.

The Standard Slag Co., Youngstown, Ohio, recently closed for complete equipment for a hard slag crushing plant with the Allis-Chalmers Mfg. Co.

Plans have been completed for the erection of four buildings at the plant of the Federal Enameling & Mfg. Co., McKees Rocks, Pa., to replace the works recently destroyed by fire, with loss of about $200,000. The structures will be one and three stories, 90 x 150 ft., 90 x 120 ft., 200 x 350 ft., and 130 x 300 ft., estimated to cost the amount of fire loss. Frank Frimmer, 1133 Charles Street, Pittsburgh, is architect.

The Pennsylvania Wire Glass Co., Dunbar, Pa., has plans for new works at Lewistown, Pa., on site of 30 acres recently purchased. The first unit will be 100 x 500 ft. Other units will be built later. Headquarters are in the Pennsylvania Building, Philadelphia. Frank A. Hayes is architect and engineer.

A manual training department will be installed in the two-story and basement high school to be erected at St. Albans, W. Va., estimated to cost $100,000. Knapp & Haviland, Capitol City Bank Building, Charleston, W. Va., are architects.

Fire, March 30, destroyed the wood-working plant of the Eclipse Co., Inc., North Girard, near Erie, Pa., with loss estimated at $200,000, including equipment. It is planned to rebuild.

The Erie Lighting Co., Erie, Pa., contemplates the erection of an addition to its electric generating plant, to include the installation of additional machinery.

The Campbell-Horigan Granite Co., 4718 Penn Avenue, Pittsburgh, will commence the erection of a two-story addition to cost $30,000.

The Pittsburgh Vitreous Enameling Co., 720 Bessemer Building, Pittsburgh, recently organized by officials of the Ingram-Richardson Mfg. Co., Beaver Falls, Pa., to manufacture metal-enamel specialties, has awarded contract to Walker & Curley, Sharpsburg, Pa., for a plant, 60 x 75 ft., at 77-79 Cliffe Street, Pittsburgh.

Fire, April 1, destroyed a portion of the plant of the Lewistown Ice & Cold Storage Co., Lewistown, Pa., with loss estimated at $35,000. It is planned to rebuild.

The Hazel-Atlas Glass Co., Wheeling, W. Va., is preparing plans for a two-story machine shop, 60 x 150 ft., estimated to cost $30,000. Charles W. Bates, 77 Twelfth Street, is architect. H. S. Brady is head.

The Dixie Co., Fairmont, W. Va., will commence the erection of a two-story oil refinery, 50 x 100 ft., estimated to cost $75,000, with machinery and laboratory equipment.

The Penn Public Service Co., Johnstown, Pa., has acquired the power plants and system of the United Service Corporation at Warren and Punxsutawney, Pa., and the property of the Keystone Utilities Co., an affiliated organization at Du Bois, Pa. Plans are under way for extensions and the installation of additional machinery.

The Dewey Furniture Mfg. Co., Pennsylvania Street, Charleston, W. Va., has tentative plans for rebuilding the portion of its factory recently destroyed by fire, with loss estimated at $100,000, including machinery.

Manual training departments will be installed in the proposed new junior and senior high schools to be erected at Charleston, W. Va., on Brooks and Garvin Streets, estimated to cost $200,000 each, for which an architect will soon be selected to prepare plans.

The West Virginia Rail Co., Huntington, W. Va., will commence the erection of a new plant for the manufacture of frogs, switches, steel mine tires, etc., to cost $100,000. An appropriation of $250,000 is being arranged for extensions and improvements, including the structure noted.

Fire, March 31, destroyed a portion of the plant of G. A. Schnabel & Sons, 2410 Penn Avenue, Pittsburgh, manufacturer of automobile bodies, with loss estimated at $250,000, including machinery. It is planned to rebuild.

Buffalo

BUFFALO, April 9.

CONSIDERABLE activity in the oil production field is indicated by orders recently placed with the Worthington Pump & Machinery Corporation in this city. One sale is for a complete pipe line outfit to the Producers & Refiners Corporation between Salt Creek and Ferris, Wyo., consisting of eight engines of 250 hp. each with 5½ x 18 in. duplex forged fluid end pumps and auxiliaries for four stations. Other large sales have been made by the same company.

The Western Electric Co., Chicago, has placed an order with the Buffalo Foundry Co. for six vacuum ovens for drying cable.

The Pratt & Lambert Co., Inc., manufacturer of varnishes, 79 Tonawanda Street, Buffalo, will build a one-story steel factory costing $40,000.

Bids will be called about April 15 for a two-story automobile service and repair building for municipal cars, to cost approximately $130,000 with equipment. The Department of Parks and Public Buildings, Municipal Building, Buffalo, is in charge.

Dempka & Knapp, 145 East Tupper Street, Buffalo, are planning for the installation of a lathe, shaper and drill press.

Bids will be received until April 17 by John H. Meahl, commissioner of parks and public buildings, Municipal Building, Buffalo, for boilers, fixtures and other equipment

to be installed in the terminal building, foot of Ferry Street.

A manual training department will be installed in the new high school to be erected at Fillmore, N. Y., estimated to cost $110,000. Herbert C. Swain, 52 West Chippewa Street, Buffalo, is architect.

The C. E. Castle Co., Greene Street, Ogdensburg, N. Y., is having plans prepared for a new machine shop to cost about $40,000. G. E. Wilson, Ogdensburg, is architect.

The C. G. Miller Co., Inc., 25 Main Street, Ogdensburg, N. Y., manufacturer of agricultural implements, will install additional equipment in its machine shop, including drop hammer, radial drill and milling machine. H. K. Miller is in charge.

The Rome Brass & Copper Co., Bouck Street, Rome, N. Y., has plans for the erection of a one-story and basement addition, 50 x 175 ft., estimated to cost $175,000 with machinery. Alfred F. Pashley, 431 South Dearborn Street, Chicago, is architect.

The Brown-Lipe-Chapin Co., Syracuse, N. Y., a division of the General Motors Corporation, manufacturer of gears and transmission systems will make enlargements and improvements in its plant to cost about $100,000, including machinery.

The City Council, Watertown, N. Y., J. W. Ackerman, city manager, will soon take bids for three 2250 kw. generators, pumps, switchboard and other equipment for installation at the municipal hydroelectric power plant at Delano Falls, estimated to cost $90,000.

The Federal Concrete Co., Buffalo, recently organized, has taken over the plants and business of Forest S. Hart & Son Co., Inc., Buffalo and Batavia, N. Y., and will commence the erection of a new works at Kensington and Wyoming Avenues for the manufacture of steel-reinforced silos, bins, etc., estimated to cost $45,000. W. E. Jones is president.

G. C. Strauss, High and Washington Streets, Buffalo, is planning for the establishment of a factory to manufacture steel automobile springs.

The Northern Ore Co., Edwards, N. Y., has tentative plans for the construction of a hydroelectric power plant at its iron properties. New mining and hoisting equipment will also be installed.

A manual training department will be installed in the new high school to be erected at Arcade, N. Y., estimated to cost $200,000. Miller & McNeil, Root Building, Buffalo, are architects.

The Power Corporation of New York, South Edwards, N. Y., has plans for the construction of a new hydroelectric power house on the Oswegatchie River, with initial capacity of 10,000 hp., estimated to cost $500,000 with machinery. W. F. Creager, Northern New York Trust Building, Watertown, N. Y., is engineer.

The St. Lawrence Garage, Main Street, Canton, N. Y., is inquiring for a high speed lathe and metal saw, for installation at its machine shop. D. E. Sullivan is in charge.

Plans are being completed by the Statler Hotel Co., Buffalo, for a six-story automobile service and repair building, 140 x 185 ft., at Delaware Avenue and Mohawk Street, estimated to cost $450,000 with equipment. George B. Post & Sons, 101 Park Avenue, New York, are architects.

The Blount Lumber Co., Lacona, N. Y., is considering the installation of a number of chain hoists, 5-ton capacity and smaller.

Detroit

DETROIT, APRIL 9.

THE Ever Hot Water Heater Co., 214 West Woodbridge Street, Detroit, is having plans prepared for a new one and one-half story plant in the vicinity of Seventeenth Street.

The General Aluminum & Brass Co., St. Aubin Street, Detroit, has inquiries out for an 8-in. punch press.

A manual training department will be installed in the new high school to be erected at Ithaca, Mich., estimated to cost $200,000, for which Lane, Davenport & Paterson, architects, Dime Bank Building, Detroit, have been commissioned to prepare plans.

The American Gear & Mfg. Co., Jackson, Mich., a subsidiary of the Hupp Motor Car Co., Detroit, has commenced the erection of a one-story heat-treating addition, 75 x 125 ft., plant for automobile forgings.

The Consolidated Stamping & Mfg. Co., 4847 Woodward Avenue, Detroit, has plans for the erection of a Canadian branch at Sarnia, Ont., estimated to cost $80,000. R. T. Carr is president.

The Fisher Body Corporation, General Motors Building, Detroit, has awarded a contract to J. A. Utley, Penobscot Building, for its proposed two-story plant at Pontiac, Mich., estimated to cost $1,500,000. Albert Kahn, Marquette Building, is architect. Fred J. Fisher is president.

A manual training department will be installed in the new two and three-story junior and senior high school, 170 x 290 ft., to be erected at Lapeer, Mich., estimated to cost $300,000, for which bids will be received on a general contract until April 17. R. A. LeRoy, Pratt Building, Kalamazoo, Mich., is architect.

The National Brass Co., Grand Rapids, Mich., manufacturer of hardware products, will commence the erection of a one-story addition, 46 x 230 ft., estimated to cost $25,000, exclusive of equipment.

The Sinclair Refining Co., 111 West Washington Street, Chicago, will soon take bids for a new oil storage and distributing plant at Marshall and Elm Streets, Grand Rapids, Mich., to cost about $50,000.

Lopshire & Schlinger, 2318 Vermont Avenue, Detroit, operating a machine shop, plans for the installation of additional equipment, primarily for experimental work.

J. H. Haven and Tumis Johnson, Grand Rapids, Mich., have purchased the foundry of Connor & Richmond for $50,000. Immediate possession will be taken and a company organized. Plans are under way for extensions and improvements, to include the installation of additional equipment.

A manual training department will be installed in the new two-story and basement high school to be erected at Caro, Mich., estimated to cost $200,000, for which an architect will soon be selected.

The Ann Arbor Automobile Products Co., Ann Arbor, Mich., recently organized, has acquired the local plant of the King Trailer Co., for a new works.

Cleveland

CLEVELAND, April 9.

THE machine tool market continues active. Manufacturers and dealers are receiving a good volume of scattered orders for single machines, and some fair-sized lots are being placed. Some railroad buying developed during the week. Three large machines, a 48-in. car wheel boring machine, a 52-in. 400-ton wheel press and a heavy duty axle lathe were purchased by the Akron, Canton & Youngstown Railroad. The New York Central Railroad purchased a large turret lathe for its Collingwood shops and has an inquiry out for several bolt cutters and other small machines. The Sloan Valve Co., Chicago, placed 10 turret lathes with a Cleveland manufacturer. The Skinner Engine Co., Erie, Pa., which recently inquired for a dozen machines, placed orders for most of this equipment. The Diebolt Safe & Lock Co., Canton, Ohio, purchased an 84-in planer type milling machine.

The advance in prices has stimulated the demand for used machinery, but the supply for good used tools is not very plentiful. The only new price change reported is an advance of 10 per cent by the Monarch Machine Tool Co., Sidney, Ohio, on its line of lathes.

The Wellman-Seaver-Morgan Co., Cleveland, has taken an order from the American Window Glass Co., Jeanette, Pa., for 10 10-ft. gas producers of its new type.

A controlling interest in the Standard Malleable Co., Zanesville, Ohio, has been purchased by R. A. Weller and an enlargement of the plant is contemplated.

A. R. Milner and Charles O. Scott have purchased the plant of the Barnes Engineering Co., Dover Ohio, and will organize the Milner-Scott Seating Co. with a capital stock of $30,000. It will manufacture opera chairs and school desks.

The Forest City Foundry Co., Cleveland, has placed contract with the Sam W. Emerson Co., Cleveland, for the erection of its new foundry.

The National Carbon Company, Inc., is removing its Everready plant from Long Island City, New York, to Cleveland, where, it is stated, the company's production of flashlight and radio batteries will be quadrupled. The battery department will occupy a three-story building, erected during the war, and which has been equipped for the new department. Among the executives who will be transferred from the Long Island plant will be A. V. Wilker, general superintendent; Charles Randall and W. H. Hines, in charge of production.

The consolidation of the United Machine & Mfg. Co. and the Canton-Detroit Foundry Co., Canton, Ohio, is being

planned and has been approved by the directors of both companies. Under the terms the United company will purchase the property of the Canton-Detroit company and will utilize the latter's plant as its foundry department. The United company manufactures stokers and separators.

Chicago

CHICAGO, April 9.

BUYING is sustained and new inquiries continue to make their appearance. Current orders are principally for single machines, but these in the aggregate bulk large. The Union Pacific has bought a few more machines against its list, but no other railroad orders have been placed. The Illinois Central is expected to close against the remainder of its list next week, but no word has been received as to when the Chicago & Northwestern and the Elgin, Joliet & Eastern will take action on their inquiries. Word comes from St. Louis that the Wabash has put out a list of machine tools for its Decatur, Ill., shops. A considerable amount of business was closed just prior to recent price advances. One Chicago buyer placed an order for about $20,000 worth of machinery to be delivered in the fall. This rather unusual order was, of course, placed to take advantage of the lower prices prevailing before recent advances went into effect.

Industrial shops throughout this territory are busy, and those engaged in automotive work are rushed. A shortage of machinists is reported from various centers, and it is not unlikely that this scarcity of men will promote the purchase of labor-saving equipment.

Recent price changes include a 10 per cent advance in emery grinding and polishing stands by the Hill-Curtis Co., Kalamazoo, Mich., and a similar advance in surface grinders, cutter and tool grinders and drill grinders by the Wilmarth & Morman Co., Grand Rapids, Mich. An Eastern manufacturer of shapers is about to announce an advance.

The Pullman Co., Pullman, Ill., has ordered three 10-ton overhead electric traveling cranes from the Shaw Crane Co.

A Finkl & Sons Co., 1326 Cortland Street, Chicago, has awarded contract for a one-story forge shop, 85 x 200 ft., on Kingsbury Street, extending back to the Chicago, Milwaukee & St. Paul Railroad, to cost $200,000. It will be equipped with a 30-ton electric traveling crane.

The Harrington & King Perforating Co., manufacturer of mining screens, 614 North Union Avenue, Chicago, has let contract for a one-story factory, 164 x 284 ft., at 5633-39 Filmore Street, to cost $150,000.

The David J. Molloy Co., manufacturer of book binders' supplies, 633 Plymouth Court, Chicago, has let contract for a two-story factory, 100 x 100 ft., at 2857 North Western Avenue, to cost $100,000.

The Fischer Furniture Co., 406 North May Street, Chicago, has retained Davidson & Weiss, architects, Chicago, to prepare plans for a large factory to be built in the block bounded by Kinzie and May Streets and Austin and Racine Avenues.

The Bovey Auto Heater Co., manufacturer of automobile heaters, 3917 South Prairie Avenue, Chicago, has let contract for a two-story factory, 34 x 113 ft., at 3719 South Prairie Avenue, to cost $21,000.

The Brunswick-Kroeschell Co., manufacturer of ice machines, 460 West Erie Street, Chicago, has retained Davidson & Weiss, architects, to prepare plans for a two-story factory, 243 x 770 ft., at 4201-25 Diversey Avenue, to cost $375,000.

The Coca Cola Co., Atlanta, Ga., has awarded contract for the construction of the first unit of a plant, 140 x 276 ft., two and three stories, at Filmore Street and Crawford Avenue, Chicago, to cost $300,000.

A large three-story building at the works of the Pullman Co., 111th Street and Cottage Grove Avenue, Pullman, Ill., was recently destroyed by fire. It contained considerable machine tool equipment, and the loss is estimated at $200,000.

The Lindgren Foundry Co., Batavia, Ill., recently incorporated with $25,000 capital stock, has been in existence since 1921, but just adopted the corporate form of organization. The company produces semi-steel castings for use in the manufacture of ice machines. The plant was built in 1921, but an extension is under construction which will give it dimensions of 80 x 200 ft. The foundry is fully equipped, but the addition of a larger cupola and blower and some new mill room equipment is contemplated. E. E. Lindgren, president, was formerly connected with the Semi-Steel Test Foundry Co. of Chicago. C. E. Lindgren is vice-president and C. R. Lindgren, secretary and treasurer.

The Holy Angels Guardian Orphanage, 2001 Devon Avenue, Chicago, has let contract for a one and three-story power plant and shop, 120 x 209 ft., to cost $150,000.

The Studebaker Corporation will start work immediately on the erection of a gray iron foundry, 680 x 720 ft., at South Bend., Ind. The cost of the plant and equipment will be $2,000,000.

The Blackmer Rotary Pump Co., Petoskey, Mich., has purchased an eight-acre site for a plant at Hilton Avenue and Griggs Street, Grand Rapids, Mich. Bids are now being received on the construction of the building.

The North Chicago Pattern & Machine Co., an organization formed by Arthur Nelson and Louis Guenette of Waukegan, and Ben Bowater of North Chicago, has opened a shop at South Sheridan Road, across from the Chicago & Northwestern depot, Waukegan, Ill., for the manufacture of patterns. Light machine work will also be done.

W. E. Gillett has purchased the Breckner Welding Shop on West Third Street, Alliance, Neb., and has taken charge of the business.

The P. & V. Cooper Mfg. Co., Hancock, Mich., has opened a plant for the manufacture of "Two-in-One" hammers, a recent invention. One face of the hammer is steel and the other is copper.

The Silvers Mfg. Co., manufacturer of enameled sheet metal products, Waterloo, Iowa, has started erection on a one-story addition, 80 x 120 ft., to cost $6,000.

The Strombeck-Becker Mfg. Co., Moline, Ill., manufacturer of handles, plans to erect an addition, one and two stories, which will increase the company's capacity nearly 50 per cent.

The Standard Semi-Steel Foundry Co., Clinton, Mo., will erect a plant at Keokuk, Mo., to cost $35,000. Castings will be made by the electric furnace method.

The plant of the Clifford-Jacobs Forging Co., Urbana, Ill., was recently damaged by fire.

The Murphysboro Brick Co., Murphysboro, Ill., will build a power house and machine shop in connection with its new plant on an 80-acre tract recently acquired at East St. Louis, Ill. An industrial railroad and conveyor system are contemplated. The plant is estimated to cost $200,000 with machinery.

Milwaukee

MILWAUKEE, April 9.

ONE of the outstanding features of business improvement is the production of farm implements, which is being reflected by a more active inquiry for machine tools by this industry. So far purchases are based more on replacements than on enlargement of capacity. Manufacturers of metal building materials and supplies are active buyers of machinery, and makers of such equipment are taking a moderate quantity of tools. Automotive industries continue to purchase equipment and are responsible for the greater part of the sales of milling machines at present.

The Milwaukee Corrugating Co., Milwaukee, has let the general contract to Klug & Smith, engineers, 65-67 Wisconsin Street, local, for a $50,000 addition to its sheet metal plant at Thirty-sixth Avenue and Burnham Street. Additional pressing, forming, punching and die-sinking equipment is being purchased. Fred F. Luedtke is secretary.

The Kiel Machine Co., Kiel, Wis., has plans by W. F. Neumann, architect, 115 Grand Avenue, Milwaukee, for a two-story brick and concrete addition, 62 x 80 ft., estimated to cost $40,000. Miscellaneous equipment is now being purchased. Henry Daniels is general manager.

The Tobin Tool & Die Co., Fond du Lac, Wis., has been organized by James H. Tobin, formerly of Shelton, Conn., and for several years chief engineer Rex Typewriter Corporation, now the Demountable Typewriter Co., Fond du Lac. For the present operations will be carried on in the toolroom of the Demountable company's factory with a force of 20 men. A few items of additional equipment are being purchased.

The Liberty Foundry Co., Wauwatosa, Wis., has been incorporated with a capital stock of $125,000 by William Grede, Ralph L. Lee and Henry L. Grede. It succeeds to

the partnership business conducted by these interests under a similar title. Enlargement of the shop is contemplated owing to the pressure upon existing facilities by increased demands for gray iron castings. A machine shop may be equipped later.

The Finkler Motor Co., 962 Island Avenue, Milwaukee, has engaged H. B. Kamschulte, consulting engineer, to design a three-story garage, with machine and service shop, 60 x 150 ft., at Third and Wright streets. David Finkler is president and general manager.

The Frost Mfg. Co., Kenosha, Wis., manufacturer of plumbers' materials and supplies, is building a brass foundry extension, 60 x 90 ft. Orders have been placed for practically all of the equipment needed at present. Walter J. Frost is president and general manager.

The Acme Machine Repair Co., 533 Milwaukee Street, is now under the sole ownership and management of Matthew Schwalbach, who has acquired the half interest of Felix Schwalbach and will continue the business on his own account. Additional floor space has been leased and will be equipped for general machine and automotive repairs.

The Quality Aluminum Co., Waukesha, Wis., is in process of organization by A. C. Pankratz, 505 Lake Avenue, to manufacture aluminum and alloy metal castings. Tentative plans are being prepared for a one-story brick and steel casting shop and machine roof, 85 x 200 ft., estimated to cost with equipment about $85,000.

The McClymont Marble Works, Milwaukee, has let the general contract to Meredith Brothers, 1043 Kinnickinnic Avenue, local, for a brick and steel plant, 80 x 218 ft., at Twenty-seventh and Greves Streets, to be occupied by the Seamless Steel Products Co. This will replace a smaller building destroyed by fire recently. The seamless company is completing purchases of new equipment, the bulk of needs already having been placed. E. J. Lansing is president and general manager.

F. R. Lueck, Inc., Milwaukee, is a new $30,000 corporation organized in Wisconsin by Frank R. Lueck, 1306 Wells Street, formerly head of the F. R. Lueck Mfg. Co., manufacturer of tools, wrenches, etc., which has been discontinued. The new concern will specialize in the manufacture of pumps. Definite plans have not yet been given out.

The Board of Education, Ladysmith, Wis., has engaged E. J. Hancock, architect, Eau Claire, Wis., to design a $50,000 addition to the present high school to provide vocational training facilities.

The Iron River Light & Power Co., Iron River, Wis., plans to build a new concrete power dam and hydroelectric generating plant at a cost of $400,000 this year, and is negotiating with engineers for designs. T. F. Mackmiller is president and general manager.

Cincinnati

CINCINNATI, April 9.

ORDERS continue in good volume and, while mostly for single machines, the number is sufficient to enable manufacturers to increase operations where possible to obtain men to man the shops. Bidding for machine shop and foundry employees is becoming common, particularly from outside points, and as a consequence wages are now as high as in the early part of 1920. With increasing costs of materials it is not to be expected, according to manufacturers, that prices of machine tools can be held at the level prevailing today. One manufacturer of multiple spindle drills which announced a 10 per cent advance in prices March 1 has advanced quotations another 10 per cent.

Manufacturers of heavier types of tools report business exceptionally good. The Skinner Engine Co., Erie, Pa., bought two large planers last week, and the Louisville Frog & Switch Co. closed for two frog and switch planers. The Beloit Iron Works was also a buyer. The Wabash Railroad is in the market for a number of tools, and the Big Four Railroad is also negotiating for a few machines, in addition to those purchased within the past three weeks. Oil country lathes continue in good demand, and one manufacturer booked four single orders in one day. Local dealers report greater activity among the small tool shops, and business from this source has shown a decided improvement within the past two weeks.

Bids, closing April 24, are being asked for an electric traveling crane and other equipment for the Indianapolis sewage disposal plant. Bids are also being taken for the erection of the dehydration plant and equipment involved.

The Paul A. Sorg Paper Co., Middletown, Ohio, is preparing to add another unit to its holdings, and the Frank Smith Paper Co. will shortly be incorporated with a capitalization of $1,500,000 to manufacture paper specialties. Plans have been prepared for a building, 250 x 500 ft., in which a power plant and two paper-making machines will be installed.

The city of Hamilton, Ohio, is contemplating the erection of a municipal electric light plant, a bond issue of $650,000 having been voted.

The Gulf States

BIRMINGHAM, April 9.

AN appropriation of $10,000,000 has been made by the Texas Co., 17 Battery Place, New York, for extensions and improvements in its refineries at Port Arthur and Port Neches, Tex.; West Tulsa, Okla., Lockport, Ill.; and Casper, Wyo., to include the construction of 46 new units in all, with additional machinery and power equipment. A new pipe line and electrically operated pumping plant will be constructed to the Smackover, Ark., oil fields.

The Decatur Cornice & Roofing Co., Albany, Ala., has acquired about six acres as a site for a new plant. Improvements will also be made at the present works which eventually will be removed to the new location. L. W. Burton is president.

The Birmingham Engine & Machinery Corporation, Birmingham, has inquiries out for a steam hammer, 2000 to 2500 lb. capacity.

The Exporters' & Traders' Compress & Warehouse Co., Waco, Tex., will build a new plant at Marlin, Tex., to replace a works destroyed by fire in 1920, estimated to cost $65,000. A list of presses and power machinery will soon be prepared.

Motors, conveying machinery and other equipment will be installed in the new printing plant to be constructed by the World Co., Inc., Fort Worth, Tex., estimated to cost $500,000, with power house and other departments.

The United States Cast Iron Pipe & Foundry Co., Birmingham, is planning for the construction of a new machine shop at North Birmingham, to cost about $40,000.

W. H. Dexter, P. O. Box 665, Jacksonville, Fla., machinery dealer, is in the market for three steel guy derricks, 10, 15 and 20 tons each, and a 30-hp. Skelton hoist, with swinger for derricks.

The Pratt Lumber Co., Monroe, La., is perfecting plans for a new one-story saw mill and planing mill, with machinery installation for heavy service, motor-driven.

The Houston Lighting & Power Co., Houston, Tex., has arranged for a fund of $10,000,000 for new power plant and line construction. Of this amount, $4,000,000 will be used for the erection of the first unit of the new generating plant now in course of erection on the Ship Channel, and a like sum will be utilized for a second unit at this location. E. B. Parker is president.

The Midland Light & Power Co., Midland, Tex., is contemplating an addition to its local generating plant to cost about $30,000. New power lines will be built to Odessa and other points. W. H. Williams is local manager.

The Zeigin-Clarke Oil & Gas Co., Monroe, La., recently organized with a capital of $150,000, has plans for a new gasoline refinery, estimated to cost $85,000 with machinery. G. W. Zeigin and W. B. Clarke head the company. Henry Walton is engineer.

Electrically operated pumping machinery will be installed by the Common Council, Elgin, Tex., in connection with waterworks extensions and improvements to cost about $45,000.

The National Lumber & Creosoting Co., Houston, Tex., has acquired property in the vicinity of the plant of the Montrose Refining Co., Fort Worth, Tex., as a site for a new wood-treatment plant to cost $100,000 with equipment. The works will include a power house, machine shop and other buildings. Page Harris is vice-president.

The Helius Casinghead Co., Fort Worth, Tex., is planning the erection of a new gasoline refinery in the vicinity of Brownwood, Tex., estimated to cost $250,000, with machinery.

The Walker Vehicle Co., State and Eighty-seventh Streets, Chicago, manufacturer of commercial automobiles, has tentative plans for a new branch plant at New Orleans, to be used for electric trucks.

B. C. Rockwell, Camden, Ark., is organizing a company to build and operate a new hardwood mill at Dallas, Tex., for the manufacture of flooring, etc., estimated to cost $350,000, with machinery. It will include a power house.

The Southern Ice & Utilities Co., Texarkana, Tex., will commence the erection of an ice manufacturing and cold storage plant at Oak and West Broad Streets, estimated to cost $100,000 with machinery.

The Burkburnett Electric Co., Burkburnett, Tex., has tentative plans for extensions in its power plant and system, including the installation of additional equipment. The company was recently purchased by new interests, headed by J. G. Mansfield.

The Golden Gravel Co., Golden, Miss., will install power equipment, washing and screening equipment, etc., at its new local plant, for which plans have been completed, estimated to cost $100,000. W. G. Sessions is general manager.

The Tuscaloosa Railway & Facilities Co., Tuscaloosa, Ala., is arranging for a new cold storage and refrigerating plant on Fourth Street. A list of machinery will soon be arranged.

The Texas Electric & Ice Co., San Antonio, Tex., has tentative plans for extensions and improvements in its works, including the installation of additional equipment. The company recently increased its capital from $90,000 to $210,000.

A complete vocational department will be installed in the new State Technological College, to be erected by the State Board of Education, Austin, Tex., on a site to be selected in Western Texas. An appropriation of $1,000,000 is available for the structure.

The Southern Pacific Railroad Co., Houston, Tex., is planning the construction of a new repair shop and engine house at Lafayette, La. New shops will also be built at the locomotive repair works at El Paso, Tex.

Indiana

INDIANAPOLIS, APRIL 9.

PLANS are being perfected by the Indianapolis Light & Heat Co., Indianapolis, for rebuilding the portion of its power plant in the Northside section, destroyed by fire April 2, with loss estimated at $500,000 including machinery.

The Shott Mfg. Co., Indianapolis, nas leased a building at 1002 Kentucky Avenue, for the establishment of a plant to manufacture bed springs, etc.

The J. F. Rittenhouse Mfg. Co., Liberty Mills, Ind., manufacturer of iron and steel specialties, is planning for the installation of a shear for cutting soft steel.

The Peterson Storage Battery Co., 323 South Lafayette Street, South Bend, Ind., is planning the erection of a new one-story works to cost approximately $30,000. Ernest W. Young, Dean Building, is architect.

The Studebaker Corporation, South Bend, Ind., has arranged a fund of $5,250,000, for new construction work. A new manufacturing unit will be erected at the local works to cost approximately $2,000,000; a new foundry to be built will cost approximately a like amount. A factory branch will be erected at New York to cost $750,000. The present output of 650 cars a day will be advanced to at least 900 cars. A. R. Erskine is president.

The Upland Flint Glass Co., Marion, Ind., has plans for rebuilding the portion of its factory destroyed by fire April 2, with loss estimated at $100,000 including machinery. Pending reconstruction, the company will concentrate production at its works at Upland, near Marion.

Baker & Reed, Indianapolis, have arranged for the establishment and operation of a machine shop at 815 Muskingum Street.

The Fairmount Glass Works, Inc., Keystone Avenue, Indianapolis, has acquired property at St. Clair and Alabama Streets for $40,000, as a site for new works, for which plans will be drawn at an early date. John Rau, Sr., is president.

The Indiana Rubber Products Co., Huntington, Ind., recently organized under Delaware laws, has acquired the local plant of the Rapid Rim Co. for $85,000 and will remodel the structure for the manufacture of automobile tires. Considerable new machinery will be installed. C. H. McDermott is president; H. G. Steinbrenner, head of the Orton-Steinbrenner., is interested in the new organization.

The Wabash Cabinet Co., Wabash, Ind., has plans for a new unit, to be commenced as soon as a three-story addition is completed. It is expected to double, approximately, the plant capacity and a large amount of new machinery will be installed.

The Radio Machine Shop, Indianapolis, will operate a machine works and manufacturing shop at 3769 North Illinois Street, for the production of wireless equipment.

The Ewald Spring Service Co., Cincinnati, will establish a branch plant at 31 South Senate Avenue, Indianapolis, for automobile spring production and repairs.

The Central South

ST. LOUIS, APRIL 9.

BIDS will soon be asked by the Collier-Adams Mfg. Co., St. Joseph, Mo., manufacturer of sash, doors and other millwork products, for a three-story and basement addition, 70 x 300 ft., estimated to cost $100,000 with machinery. E. R. Meier, Lincoln Building, is architect.

Electrically-operated pumping machinery will be installed by the Common Council, Gaylord, Kan., in connection with waterworks extensions to cost $32,000. Black & Veatch, 701 Mutual Building, Kansas City, Mo., are engineers.

The Roane Iron Co., Chamberlain Building, Chattanooga, Tenn., will build a new electric power plant with initial capacity of 1500 kw.

The Ewald Iron Co., 224 North Clay Street, Louisville, plans the erection of new works to cost $45,000, for which a site has been selected. Baylor Hickman is president.

A manual training department will be installed in the two-story high school to be erected at Willow Springs, Mo., estimated to cost $80,000. Heckenlively & Mark, Springfield, Mo., are architects.

The Anthony Salt Works, Anthony, Kan., is planning to rebuild its mill, power house and machine shop, destroyed by fire March 29 with loss estimated at $250,000, including machinery.

The American Paper Mfg. Co., Kansas City, Mo., is planning the erection of a new mill on property recently acquired in North Kansas City, 195 x 625 ft., with initial capacity of about 30 tons, estimated to cost $100,000. It will include a power house.

The Spanish-American Tile Co., Tulsa, Okla., recently organized with a capital of $50,000, plans the operation of a local factory to manufacture floor and wall tile products, estimated to cost $40,000. F. W. and C. J. Gallagher head the company.

Manual training departments will be installed in the two new junior high schools to be erected at St. Joseph, Mo., estimated to cost $250,000 each, for which an architect will soon be selected.

Fire, April 1, destroyed a portion of the oil storage and distributing plant of the Columbia Oil Co., 3417 Papin Street, St. Louis, with loss estimated at $75,000 including equipment.

The Atlantic Ice & Coal Co., Chattanooga, Tenn., has plans for a four-story addition, 80 x 140 ft., to its ice-manufacturing and cold storage plant, including remodeling and improving the present works, estimated to cost $100,000, with machinery. Wilshire Haynes is general manager.

The Common Council, Oran, Mo., has tentative plans for the installation of a municipal electric power plant in conjunction with pumping station for a waterworks system, estimated to cost $40,000. W. A. Fuller, 1917 Railway Exchange Building, St. Louis, is engineer.

The Bridgeport Machine Co., Wichita, Kan., has been organized under Delaware laws, to take over the plants and business of the company of the same name, specializing in the production of oil well machinery and supplies. Plans are under way for extensions, and a portion of the proceeds from a stock sale amounting to $980,000, will be used for this purpose. The plants at Wichita and at Marietta, Ohio, will be continued in operation. James A. Woods is president.

The Manne Brothers Furniture Co., 5615 Delmar Avenue, St. Louis, will take bids about April 15, for a new plant, 50 x 130 ft., estimated to cost $55,000. Theodore Steinmeyer, International Life Building, is architect.

The St. Louis-San Francisco Railroad Co., St. Louis, has tentative plans for rebuilding the portion of its shops and engine house at Monett, Mo., destroyed by fire, with loss estimated at $350,000, including equipment.

The Certain-teed Products Corporation, St. Louis, manufacturer of roofing and other building products, has acquired the plants and business of the Acme Cement Plaster Co., Frisco Building, same city. The new owner is considering additions in a number of the mills, particularly those at Acme, Tex., with new power plants and other buildings to cost about $500,000.

The Knoxville P & M Mortar Co., Knoxville, Tenn., recently organized with a capital of $75,000, will build a power plant in connection with its proposed local mills for the production of cement plaster, fire clay, lime, etc. The initial works will be 50 x 150 ft., and later will be extended with refining machinery. W. B. Townsend is president and J. A. Wallace, secretary.

The Collins Specialty Co., Tulsa, Okla., is perfecting plans for the establishment of a factory at Sand Springs, Okla., to manufacture parts and attachments for Ford automobiles. J. B. Collins heads the company.

The Prairie Pipe Line Co., Ardmore, Okla., is planning

for the installation of an electrically-operated pumping plant at Graham, Okla., in connection with new pipe line construction.

The White Oak Corporation, P. O. Box 1094, Knoxville, Tenn., is in the market for a self-feed rip saw, circular saw, jointer, planer, matcher and other wood-working machinery.

The Silver Lake Mining Co., Seligman, Mo., is planning for the installation of new crushing machinery, power equipment, mechanical belting and transmission machinery. T. R. Gilliam is head.

A manual training department will be installed in the new high school to be erected at Warsaw, Mo., estimated to cost $85,000. H. D. Pampel, 404 Finance Building, Kansas City, Mo., is architect.

The Consumers, Ice Co., Sand Springs, Okla., is contemplating the construction of a new ice-manufacturing and refrigerating plant to cost about $70,000.

A manual training department will be installed in the new school to be erected by the John Burroughs School trustees, Clayton, near St. Louis, estimated to cost $125,000. LeBaume & Klein, St. Louis, are architects.

The Pidgeon-Thomas Iron Co., South Main Sreet, Memphis, Tenn., has plans for a number of new units, to cost in excess of $75,000. E. L. Harrison, Memphis, is architect and engineer.

Canada

TORONTO, April 9.

BUSINESS continues to improve in the machine tool market, and local dealers' sales for the past six months show a decided improvement over those for the corresponding period a year ago. The demand does not feature any particular line, but is spread over practically all industries. Railroad buying has been a feature of the market, and it is expected that small lists will continue to appear from this source. The Toronto Transportation Commission is building new car shops in Toronto and will require equipment, for which a list is being prepared. Car building companies are also entering the market from time to time. The automotive industry is furnishing considerable business, and some big lists are expected from the Ford Co. of Canada for new plants under construction at Toronto and at Ford, Ont. Equipment for electrical development projects is moving freely and good sales have been reported of late. A large number of the mining interests in Ontario have been in the market for equipment for mills, etc., and it is reported that many others will come forward during the next few weeks. Industrial activities as a whole are steadily improving.

The plant of the Gilbert Boat Co., Brockville, Ont., was destroyed by fire April 2 with a loss to building and equipment of $30,000. A well-equipped machine shop and dry cleaning plant were included in the loss.

Bids will be called at an early date for machinery and equipment for the Belleview Pumping Station, Brantford, Ont. F. Adams is city engineer.

It is reported that Vancouver, B. C., capitalists are contemplating the erection of an oil refinery at Lethbridge, Alta., to cost about $200,000. J. C. Williamson, Vancouver, B. C., is interested.

Savoie & Co., Manseau, Que., are in the market for two boilers, 5 to 6½ ft. diameter, 10 to 14 ft. long, 150 lb. pressure; also for one 200 to 250-hp. engine. J. Savoie is purchasing agent.

The Canada Bread Co., Pears Avenue, Toronto, has purchased the property immediately north of its present plant and will build an addition to cost $100,000.

Negotiations have been opened at Nelson, B. C., in connection with the establishment of a pulp and paper plant there to cost $2,000,000 for the Howland & Waltz Pulp & Paper Co., Minneapolis. T. G. Howland and J. Jacobson are in charge for the company.

Concrete foundations for the new plant of the Ford Motor Co., Toronto, have been completed and structural work has started. It will be completed by July or August. The building will cost $1,500,000 and will occupy 5½ acres and will have an output of between 250 and 300 cars per day. I. E. Fox is manager of the Toronto plant.

The Tavistock Building & Mfg. Co., Hope Street, West, Tavistock, Ont., has taken over the plant and business of the H. W. Kalbfleisch Co., and will add a wood-working department.

Bids for waterworks plant will be received by H. D. Goode, Lansing, Ont., until April 14 as follows: Construction of pump house, filter plant and dam; supply and installation of filtering and pumping machinery, elevated tanks, etc.

John Hyndman, Gorrie, Ont., is in the market for a small stone crusher, about 5 x 8-in. mouth.

The Town Council, Yarmouth, N. S., will purchase a centrifugal pump for the waterworks plant. Mr. Wickwire is engineer.

The Pacific Coast

SAN FRANCISCO, April 4.

CONTRACT has been awarded by the Detroit Steel Products Co., San Francisco, to the Adam Arras Co., 185 Stevenson Street, for the erection of a new one-story plant at Emeryville, Cal., to cost about $45,000.

The Los Angeles Ice & Cold Storage Co., Los Angeles, will commence the erection of a two-story and basement plant, 61 x 115 ft., to cost $35,000, exclusive of machinery. The installation will include two electric traveling cranes. John E. Kunst, Higgins Building, is architect.

The Southern California Edison Co., Los Angeles, has arranged an appropriation of $26,000,000 for extensions and improvements during the year, the work to include new hydroelectric generating plants to cost $11,850,000; steam power plants, $265,000; branch power plants and steel tower transmission, $4,149,000; distributing lines, $1,535,000; miscellaneous machinery and equipment, $1,400,000.

The Mohawk Oil Co., Coalinga, Cal., has plans for a new refinery in the vicinity of Santa Fe Springs, estimated to cost $300,000. A bond issue of $500,000 has been sold, the proceeds to be used for this and other expansion.

The Pacific Gas & Electric Co., 445 Sutter Street, San Francisco, is planning for extensions and improvements in its plant and system at Corning, Cal., to cost $54,000.

The Consumers Rock & Gravel Co., Twenty-sixth and Alameda Streets, Los Angeles, has plans for rebuilding the portion of its plant recently destroyed by fire. New rock-crushing machinery, transmission equipment and motors will be installed.

The Willamette Iron & Steel Co., Portland, Ore., will build a new one-story machine shop, 106 x 140 ft.

The Gregory Furniture Mfg. Co., Tacoma, Wash., has awarded contract to Bonnell & Sons, Tacoma, for a new plant on Center Street, to cost about $60,000 including machinery.

A manual training department will be installed in the new high school to be erected at Alameda, Cal., estimated to cost $750,000, for which an architect will soon be selected.

The San Joaquin Light & Power Corporation, Fresno, Cal., has plans for new industrial works at Orange and California Streets, to cost about $300,000 with machinery. It will include a machine shop, meter-testing and repair works, transformer-testing plant and pole-treating plant.

The Long-Bell Lumber Co., Kansas City, Mo., proposes to build a power plant in connection with a lumber mill at Longview, Wash., to cost $500,000, with steam and electric equipment. The entire plant will represent an investment of $2,000,000.

The Columbia Steel Co., Pittsburg, Cal., will commence the erection of a new machine shop to cost $150,000.

The McClenahan Products Co., Inc., 601 Howard Street, San Francisco, is considering the erection of a new plant at East San Mateo, for the manufacture of brick, tile, etc., estimated to cost $100,000.

The Peerless Truck & Motor Co. reports a profit for 1922 of $1,005,112 against a loss of $103,665 in the preceding year. Gross sales totaled $16,001,983 against $12,055,904 in 1921. Profit and loss surplus as of Dec. 31 was $5,173,392 as compared with $5,257,808 at the close of 1921.

The Iron Products Corporation and subsidiaries show net earnings for 1922 of $512,780, after charges, depreciation, and taxes. This compares with a net loss of $1,136,911 in the previous year. Operating earnings were $1,001,823 compared with $791,425 loss in 1921, and the profit and loss surplus was $1,228,023 as against $798,645 in the preceding year.

The Cleveland Abrasive Wheel Co., Cleveland, has added to its plant and equipment and is now in a position to supply vitrified and shellac wheels as well as those manufactured by the silicate process. At first the company manufactured only silicate wheels, but it has widened its activities to include all grinding wheel requirements.

Current Metal Prices

On Small Lots, Delivered from Merchants' Stocks, New York City

The following quotations are made by New York City warehouses.

As there are many consumers whose requirements are not sufficiently heavy to warrant their placing orders with manufacturers for shipments in carload lots from mills, these prices are given for their convenience.

On a number of items the base price only is given, it being impossible to name every size.

The wholesale prices at which large lots are sold by manufacturers for direct shipment from mills are given in the market reports appearing in a preceding part of THE IRON AGE under the general heading of "Iron and Steel Markets" and "Non-ferrous Metals."

Iron and Soft Steel Bars and Shapes

Bars:	
Refined iron bars, base price	3.54c.
Swedish bars, base price	7.50c.
Soft steel bars, base price	3.54c.
Hoops, base price	5.19c.
Bands, base price	4.39c.
Beams and channels, angles and tees 3 in. x ¼ in. and larger, base	3.64c.
Channels, angles and tees under 3 in. x ¼ in., base	3.54c.

Merchant Steel

	Per Lb.
Tire, 1½ x ½ in. and larger	3.60c.
(Smooth finish, 1 to 2½ x ¼ in. and larger)	3.80c.
Toe-calk, ½ x ⅝ in. and larger	4.60c.
Cold-rolled strip, soft and quarter hard	7.50c. to 8.50c.
Open-hearth spring steel	4.50c. to 7.00c.
Shafting and Screw Stock:	
Rounds	4.40c.
Squares, flats and hex	4.90c.
Standard tool steel, base price	15.00c.
Extra tool steel	18.00c.
Special tool steel	23.00c.
High speed steel, 18 per cent tungsten	75c. to 80c.

Tank Plates—Steel

¼ in. and heavier	3.64c.

Sheets

Blue Annealed

	Per Lb.
No. 10	4.59c.
No. 12	4.64c.
No. 14	4.69c.
No. 16	4.79c.

Box Annealed—Black

	Soft Steel C. R., One Pass. Per Lb	Blued Stove Pipe Sheet Per Lb.
Nos. 18 to 20	4.90c. to 5.30c.	.....
Nos. 22 and 24	4.95c. to 5.35c.	5.35c.
No. 26	5.00c. to 5.15c.	5.40c.
No. 28	5.10c. to 5.50c.	5.50c.
No. 30	5.30c. to 5.75c.	.....

No. 28 and lighter, 36 in. wide, 10c. higher.

Galvanized

	Per Lb.
No. 14	5.20c. to 5.60c.
No. 16	5.35c. to 5.75c.
Nos. 18 and 20	5.50c. to 5.90c.
Nos. 22 and 24	5.65c. to 5.95c.
No. 26	5.80c. to 6.20c.
No. 27	5.95c. to 6.35c.
No. 28	6.10c. to 6.50c.
No. 30	6.60c. to 7.00c.

No. 28 and lighter, 36 in. wide, 20c. higher.

Welded Pipe

Standard Steel			*Wrought Iron*		
	Black	Galv.		Black	Galv.
⅛ in. Butt...	—47	—31	⅛ in. Butt...	— 4	+19
¼ in. Butt...	—52	—39	¼ in. Butt...	—11	+ 9
1-3 in. Butt..	—54	—41	1-1½ in. Butt	—14	+ 6
2½-6 in. Lap.	—50	—37	2 in. Lap....	— 5	+14
7-8 in. Lap...	—47	—20	2½-6 in. Lap.	— 9	+ 9
9-12 in. Lap..	—42	—18	7-12 in. Lap..	— 3	+16

Steel Wire

BASE PRICE* ON NO. 9 GAGE AND COARSER	Per Lb.
Bright basic	5.00c.
Annealed soft	5.00c.
Galvanized annealed	5.65c.
Coppered basic	5.65c.
Tinned soft Bessemer	6.65c.

*Regular extras for lighter gage.

Brass Sheet, Rod, Tube and Wire

BASE PRICE

High brass sheet	21⅞c. to 22⅞c.
High brass wire	22⅜c. to 23⅜c.
Brass rods	19⅛c. to 20⅛c.
Brass tube, brazed	28⅞c. to 29⅞c.
Brass tube, seamless	25⅛c. to 26⅛c.
Copper tube, seamless	27¾c. to 28 c.

Copper Sheets

Sheet copper, hot rolled, 24 oz., 25½c. to 26½c. per lb. base.

Cold rolled, 14 oz. and heavier, 3c. per lb. advance over hot rolled.

Tin Plates

Bright Tin		Coke—14-20		
	Grade "AAA" Charcoal 14x20	Grade "A" Charcoal 14x20		Prime Wasters
			80 lb..	$6.30 $6.05
			90 lb..	6.40 6.15
			100 lb..	6.50 6.25
IC..	$11.00	$9.75	IC..	6.65 6.40
IX..	12.25	11.00	IX..	7.65 7.40
IXX..	13.50	12.25	IXX..	8.65 8.40
IXXX..	14.75	13.50	IXXX..	9.65 9.40
IXXXX..	16.50	14.75	IXXXX..	10.65 10.40

Terne Plates

8-lb. coating, 14 x 20

100 lb.	$7.00
IC	7.25
IX	7.50
Fire door stock	9.00

Tin

Straits pig	51c.
Bar	58c. to 63c.

Copper

Lake ingot	19 c.
Electrolytic	18½c.
Casting	18¼c.

Spelter and Sheet Zinc

Western spelter	9¼c.
Sheet zinc, No. 9 base, casks	11c. open 11½c.

Lead and Solder*

American pig lead	9¼c. to 9¾c.
Bar lead	12½c. to 14c.
Solder, ½ and ½ guaranteed	34c.
No. 1 solder	32c.
Refined solder	29c.

*Prices of solder indicated by private brand vary according to composition.

Babbitt Metal

Best grade per lb.	75c. to 90c.
Commercial grade, per lb.	35c. to 50c.
Grade D, per lb.	25c. to 35c.

Antimony

Asiatic	10c. to 11c.

Aluminum

No. 1 aluminum (guaranteed over 99 per cent pure), in ingots for remelting, per lb.	30c. to 31c.

Old Metals

The market is very inactive and sluggish. Dealers' buying prices are as follows:

	Cents Per Lb.
Copper, heavy crucible	14.50
Copper, heavy wire	13.75
Copper, light and bottoms	11.75
Brass, heavy	8.25
Brass, light	6.75
Heavy machine composition	11.50
No. 1 yellow brass turnings	8.25
No. 1 red brass or composition turnings	10.50
Lead, heavy	7.25
Lead, tea	5.25
Zinc	4.75